DOCUMENT RESUME

ED 108 866 SE 019 008

AUTHOR	Rocchio, Richard; Lee, Eve
TITLE	On Being a Master Planner - A Step by Step Guide. From a Nationwide Study of Environmental Education Planning.
INSTITUTION	Center for Research and Education, Denver, Colo.
SPONS AGENCY	ERIC Information Analysis Center for Science, Mathematics, and Environmental Education, Columbus, Ohio.
PUB DATE	Dec 74
NOTE	165p.
AVAILABLE FROM	Ohio State University, Center for Science and Mathematics Education, 244 Arps Hall, Columbus, Ohio 43210 ($3.50)
EDRS PRICE	MF-$0.76 HC-$8.24 PLUS POSTAGE
DESCRIPTORS	*Educational Planning; *Educational Programs; *Environmental Education; Master Plans; Natural Resources; Program Descriptions; *Program Planning; Science Education; State Departments of Education; *State Programs

ABSTRACT

This guide demonstrates a new way of utilizing the planning process within a social movement context in view of developing a state master plan for environmental education. In addition the book serves as a guide to realistic planning, including models, definitions, and examples. The guide contains five parts: Part One - The background, Part Two - Pre-planning, Part Three - The planning process, Part Four - Making it Happen, and Part Five - State of the art. Part One traces the history and presents a short summary of the status of state master planning for environmental education. A discussion of the Environmental Education Act and a list of environmental education actions by each state are included. Part Two directs the planner's attention to some issues that should be considered prior to any attempt to launch a planning effort in environmental education. Part Three covers the "what" and "why" of a goal-referenced system of planning. The five chapters in this section cover the development of a planning model, assessment, goals and objectives, strategies for meeting goals, and evaluation procedures. Part Four is devoted to explaining step by step the procedure one might follow in undertaking an environmental education planning effort. Part Five contains a discussion of the present state of the art of environmental education and some directions for the future including examples of implementation evidence. Six appendices are included. (TK)

On Being A Master Planner

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED108866

A Step by Step Guide

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
Eve Lee
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

SE 019 008

ERIC / SMEAC

*From A Nationwide Study Of Environmental Education Planning

ED108866

ON BEING A MASTER PLANNER ...

A STEP BY STEP GUIDE

FROM A NATIONWIDE STUDY OF ENVIRONMENTAL EDUCATION PLANNING

by
Richard Rocchio
and
Eve Lee
Center for Research and Education

ERIC Information Analysis Center for
Science, Mathematics and Environmental Education
400 Lincoln Tower
The Ohio State University
Columbus, Ohio 43210

December, 1974

© 1974
Center for Research and Education
Denver, Colorado (USA)

All rights reserved. No part of this book may be used or reproduced in any way without written permission from the Center for Research and Education, 2010 E. 17th Avenue, Denver, Colorado 80206, or the publisher.

CONTENTS

Foreword v
Preface ix

PART ONE BACKGROUND 1

1 State Planning for Environmental Education

Environmental Education Act of 1970 2
Planning Efforts Prior to the Act 5
Summary of the Situation Today 5

2 Glossary: Definitions and Meanings Based on Assumptions or Philosophy 20

PART TWO PRE-PLANNING 26

3 Controversial Issues re Environmental Education Planning 27

PART THREE THE PLANNING PROCESS 34

4 A Goal-Referenced Model 35

5 Assessment -- *Where are we now?* 39

6 Goals and Objectives -- *Where do we want to be?* 42

7 Strategies -- *How do we get there?* 45

8 Evaluation -- *How do we know if we're achieving our goals?* 50

PART FOUR MAKING IT HAPPEN 52

9 Operating Decisions 53

Participative vs. Elite Approach 54
Planning Only or Planning and Implementation 58

10 Situation Assessment

The Planning Climate 59
Taking the Inventory 59

11 Goals and Objectives

Goals of the Planning Process 63
Methods of Determining the Goals 64
Program Goals Resulting from Planning Efforts 65

12 Strategies for Achieving the Goal

Identifying Constraints 67
Methods to Overcome the Constraints 69
Educational Programs and Activities 71
Implementation as a Parallel Activity 75
Organizational Structure 76

13 The Master Plan Document 79

14 Implementation of the Plan 83

Roles and Responsibilities 84
Getting Educational Activities Under Way 85

15 Evaluating the Effectiveness of the Plan 88

PART FIVE STATE OF THE ART 93

16 How Far Have We Come? 94

17 Some Directions for the Future 112

Appendix A Unobtrusive Measurement 117
References: Evaluation and Measurement

Appendix B Forms for Gathering Information 119

Appendix C Organization of Data 139

Appendix D Determining the Planning and Program Goals 145

Appendix E Force Field Analysis 149
Brainstorming
Creative Problem Solving

Appendix F Technical Assistance 152
References: Training
References: Use of Mass Media

FOREWORD

Whether one accepts all the premises of Toffler's *Future Shock* or not, the fact remains that a new "consciousness" of the environment in which we live has emerged in the 1970's on a world-wide basis. Fragmented, disconnected, and often confusing, this consciousness has produced a broad-based social movement with a variety of action response styles, ranging from citizen protests and institutional coping strategies to rational planning efforts.

There are advocates for each type of response, rationalizing their strategies oft times on the basis of self-proclaimed results. But the truth of the matter is that, in most social action, participants get caught up in the drama of activities and lose sight of the path they have covered, thus leaving behind in the dust of human interaction the art and technology of social change.

In *On Being a Master Planner*, Rocchio and Lee demonstrate a new way of viewing and utilizing the planning process within a social movement context. Looking at the task of developing a state master plan for environmental education, they (1) critically examine the assumptions, concepts, and procedures with which state planners throughout the country have operated; (2) assemble a national and state history of legislative and bureaucratic responses to environmental planning; and (3) abstract and integrate into a comprehensive framework the essentials for effective social action applicable to the general field of planning.

Thus, not only was a state planning process undertaken (which made its own contribution to the environmental movement) but those involved in the process leave behind, through the documentation provided by this book, a written history of one dimension of our society's response to environmental consciousness.

In addition, the book serves as a guide to realistic planning and, as such, makes a practical contribution to the field by making obvious and clear through lucid models, definitions, and examples what professional planners often obscure in technical jargon and leave undone in the world of practice.

Regardless of how the planning process is viewed, there are some basic tasks which must be completed to be effective. The process is much more complex and comprehensive than just

a set of steps to be taken. The planner should be as much, if not more, concerned with what is happening to people in their emotional commitments and cognitive thinking as to what gets on paper. High on the list of factors affecting the process is, of course, the role, style, stance and commitment of the planner himself. And the probability of implementing what has been planned is directly related to the timing, amount and depth of involvement of people as well as systems. These elements, combined with movement through time in the completion of various phases of activities, represent a dynamic, evolving, and broadening process from problem definition to evaluation of the results of planning. It is the details of what makes up this dynamic that represents the substance of this book.

What the authors assume, although not addressed in an explicit way, is the consideration which should be given by advocates of change to the various structures in society that may be used to promote broad-based behavioral and social change. The "problem" of dealing with the environment, like many of our other societal problems, is that it is comprehensive; no one individual or group can make a secure environment for all mankind. To accomplish the task, all individuals and systems must work together in a compatible way. Planners and social activists more often than not forget or overlook that one of the main ways of achieving congruence among the various units in a democratic society is through the universal sharing of common concepts and understandings.

Education, both formal and informal, has become a major mechanism in American society to develop consensus for individual and collective actions. Planning and carrying out mass education programs dealing with a given problem, however, is a new frontier in the arena of social action; and the effort reported in this book is one of the first accounts.

In comparing the approach to social change described in the following pages to other types of societal problem solving, one can find few examples. Urban problems, for instance, have become a major concern in current years to the extent that the term "urban crisis" is often used to attract attention to a deep-seated failure in our social system. But there has been no federally supported and encouraged state planning effort for urban problem education on a mass basis. Where educational programs have sprung up, they have tended to focus on the professionals rather than the general public.

For planners and others interested in social change,

much can be learned for future problem solving both from the *content* of this book and from the *approach* to social change through planning and implementing educational programs dealing with a societal problem. Although there is little new here, the combination of often unrelated factors into a composite whole has provided a totally new perspective on the planning process and its application to social problem content and social action strategies.

Daniel J. Schler, Ph.D.
Director of the Graduate
Program in Urban and
Regional Planning-
Community Development
College of Environmental Design
University of Colorado

PREFACE

In 1972, in the second year of the Environmental Education Act, the U. S. Office of Education (USOE) designated Colorado's master plan program a national demonstration project because of the participative nature of its approach. As a result, the Center for Research and Education (CRE), which had administered the planning grant, was awarded a second grant primarily intended to provide technical assistance to other states in their planning efforts.

During this experience it became increasingly apparent that planners needed some written materials as a guide to design and conduct the various aspects of a comprehensive planning effort, especially in view of the fact that in the majority of cases the people responsible for statewide master planning were not planners by training or experience. This book is our attempt to meet those needs.

Much of what is contained here was included in a report to the U. S. Office of Education in late 1973 documenting the work performed under the two grants. As one of the purposes of the report was to provide a record of the experiences of planners throughout the country, several activities were undertaken to supplement the information gleaned through CRE's own technical assistance work.

A questionnaire was circulated (in April 1973) to planners in 42 states asking them to share their experience. This was followed by a national conference in Estes Park, Colorado in May 1973 where planners from 20 states and ten members of the National Advisory Council for Environmental Education produced a volume of information. We also reviewed a number of grant application proposals for state planning as well as the 20 State Master Plan documents which were published as of that time. Finally, key sections of the draft report were circulated among a representative group of state planners for additional comments and insights.

The results of the questionnaire, the conference agenda and participants, and summaries of the Master Plan documents are included in that report* which has been put into the dis-

---

* Richard Rocchio and Eve Lee, *Planning for Environmental Education: The Nation's Experience 1970-73*, ERIC/SMEAC Clearinghouse No. SE 018196.

tribution system of the ERIC Information Analysis Center for Science, Mathematics and Environmental Education at Ohio State University.

In preparing this book, we mailed a second questionnaire (in August 1974) to planners in all states involved in state planning to update our information, especially concerning the progress made during the past year in implementing their master plans. We wish to express our sincere appreciation to all those who contributed by providing us with information, and hope that this chronicle will throw some light on the status of environmental education in America. We are also grateful to ERIC and the Ohio State University for making this book available.

Although the work leading to the preparation of the report, and thus of the book, was performed pursuant to grants from the U. S. Office of Education, Department of Health, Education and Welfare, the opinions expressed here do not necessarily reflect the position or policy of USOE and no official endorsement by them should be inferred.

Richard Rocchio
Eve Lee
Associate Directors
Center for Research and Education

Denver, Colorado
November 1974

PART ONE

THE BACKGROUND

This section traces the history and presents a short summary of the status of state master planning for environmental education. It sets the stage for the discussion to follow.

CHAPTER 1

STATE PLANNING FOR ENVIRONMENTAL EDUCATION

In recent years an increasing concern about environmental conditions has become evident -- including what we are or are not doing to define them and to prevent or solve them. A lot of work has been done in conservation education and outdoor education, which laid the groundwork for the content and the process of present day *environmental* education. However, only during the past eight to ten years has there been a specific emphasis on environmental education itself, and only during the past four or five years has there been any real emphasis on environmental education *planning*. In fact, the whole field of comprehensive planning for any area of education is little more than five years old.

On a nationwide basis, the passage of the Environmental Education Act in the fall of 1970 was the single greatest boost given to this entire field.

THE ENVIRONMENTAL EDUCATION ACT (PUBLIC LAW 91-516)

The purpose of the Act was to encourage and support individual states during the ensuing three years in initiating and developing environmental education programs to improve the quality of the environment and maintain ecological balance. Environmental education was defined as "the educational process dealing with man's relationship with his natural and man-made surroundings, and including the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment."

Among the suggested activities was comprehensive statewide program development. It is with this kind of comprehensive planning that this book primarily deals.

The Act provided for an Office of Environmental Education (OEE) to be housed in the U. S. Office of Education (USOE) to administer the program. This office provided support to the state planning efforts in three ways:

First, it funded twelve states during fiscal years

1971-72 and 1972-73 specifically for the development of environmental education *master plans*. It also helped give shape and direction to the effort by setting out guidelines for how grant money was to be used.

Second, it provided technical assistance to those at the state and local level engaged in planning activities. This became more focused during the second year; in addition to the consulting work of its own staff, it designated Colorado's planning program a national demonstration project and funds were made available, through the Center for Research and Education, to give both direct and indirect assistance to other states.

Third, it helped produce at least the beginnings of a synergism of effort toward environmental education generally, i.e., interagency cooperation at the federal level and new partnerships with state and local agencies.

Initially, the Office of Environmental Education put a great deal of emphasis on the preparation of state plans. The guidelines for preparing grant proposals helped put their expectations into perspective. In summary, the major provisions were:

- A state plan should be dynamic and flexible enough to respond continuously to the needs of the people in the state, responsive to all age levels.
- It should document and make use of the existing and potential resources in the state, including curriculum materials, facilities, funds, personnel, and information concerning the environment.
- It should be an overall education plan utilizing both formal and nonformal educational systems.
- It should describe the needs and priorities in implementing the plan.
- It should be useful to a variety of agencies and organizations in identifying their best means of providing assistance.
- The planning group should involve a task force composed of representatives of statewide constituencies in elementary and secondary education, higher education, conservation, health and environmental protection agencies, private educational and environmental organizations, broadcasting, business, labor and industry and should therein reflect the educational and environmental resources of the state.

The initial importance of state planning is best demonstrated by the following quotations from the grant application guidelines in 1971 and 1972:

> Although not required for funding under the Environmental Education Act during fiscal years 1971 and 1972, implementation of projects of significant impact should await the development of State plans. At the Federal level, priority will be given to special evaluation and dissemination activities which are part of a State commitment.[1]

> Environmental Education Act funds are available to assist statewide evaluation and dissemination activities connected with State plan development. Although not required for funding under the Environmental Education Act during fiscal years 1971 and 1972, implementation of projects of significant statewide impact should await the development of State plans.[2]

These statements led most state planners and many others to believe that the chances for obtaining grant money for their environmental education programs would be enhanced if the state had a master plan under way. By the same token, many were reluctant to proceed with any proposals for major environmental education programs without a state plan, and in some cases used the above statements to help convince others at the state level that a master plan should be formulated. The result was that a great many people throughout the nation developed the expectation that if, by whatever means, they developed a state plan additional funding would follow.

During the course of time OEE's funding priorities shifted, and these expectations have not been fulfilled. No provision for state planning was made in the 1973 guidelines (or in 1974 following the extension of the Act) and no funds

---

[1] U. S. Dept. of Health, Education and Welfare, Office of Education, Office of Priority Management, *Environmental Education Act (Public Law 91-516) Handbook on Preparing Proposals*, March 1971.

[2] U. S. Dept. of Health, Education and Welfare, Office of Education, *Environmental Education Act (Public Law 91-516) Handbook on Preparing Proposals*, October 1971.

from PL 91-516 have been made available to individual states to help implement the *overall* program outlined in their master plans. This fact becomes an important piece of background information when assessing the present state of the art in statewide planning efforts.

PLANNING EFFORTS PRIOR TO THE ACT

While the Act added impetus to initiate statewide planning for environmental education, 11 states had their own planning programs under way prior to the passage of the Act (California, Colorado, Florida, Illinois, Minnesota, New Hampshire, New Jersey, New York, Ohio, Oregon, and Washington). In most cases these efforts were organized by a directive from the state legislature, the governor, or state department of education. In some cases, however, pressure by citizens, private and public groups or organizations became the catalyst.

Some of the early planning efforts dealt with developing or expanding conservation education programs in the public school system (e.g., California). Others called for the state departments of education and natural resources to work together to develop an environmental/conservation program for the school system and the general public (e.g., Washington). In some cases, the state department of education provided guidelines for environmental education by utilizing federal grants such as the Elementary and Secondary Education Act of 1965, Title III (e.g., Florida). Other states used a group or organization to develop long-range planning and programming efforts to improve the general environmental quality in the state and to deal with environmental education as one aspect of this effort (e.g., Minnesota).

In New Jersey, a state council for environmental education was established in 1967 and, under a State grant, a master plan completed by 1970. The first comprehensive state plan in the nation, it was heavily funded for implementation under Title III-306, USOE discretionary funds, beginning in mid-1971.

SUMMARY OF THE SITUATION TODAY

To the best of our knowledge, 37 states plus the District of Columbia and the Tennessee Valley Authority are presently engaged in planning or in attempting to implement a plan. Twelve of these were awarded grants from PL 91-516 in 1971 and 1972 for the development of master plans: Alabama, Colorado, District of Columbia, Hawaii, Massachu-

setts, Michigan, Minnesota, New Hampshire, New York, North Carolina, Texas, and Wisconsin. (Four received grants in both years: Colorado, Massachusetts, Minnesota, and Texas.)

Again to the best of our knowledge, 27 state plan documents have been published so far, at least in draft. Space will not permit complete summaries of these Plans to be included here, but a brief description of each appears in the summary of state planning at the end of this chapter. The summary also includes the name of the person in each state from whom more detailed information or a copy of the plan may be obtained.

A variety of reasons have been given for undertaking the task of preparing a master plan. It was recognized generally that for any major project to be successful an effective planning effort had to be made; but primarily, those responsible for preparing master plans considered it to be the most effective way to formalize a structure to implement environmental education programs in the state. Some planners indicated that motivation was based on the pressure exerted by various interests in the state to initiate coordinated planning, thus eliminating duplication of effort. Others indicated they were motivated by the strong possibility of receiving federal grant money for environmental education projects once such a plan was adopted.

Planners hoped that through statewide planning they could "turn on" the state to environmental education and to motivate and get moving those agencies, organizations and individuals who already had some responsibility for it. They also hoped that the planning effort would itself be a form of environmental education.

Finally, a major motivating force was to set in motion a process for providing continuous leadership for environmental education within the state and to provide a mechanism for continuing to assess state environmental education needs, to evaluate accomplishments, and to update the recommendations to reflect this new data. Thus, a master plan was seen as a blueprint, subject to modification and revision as needs changed, for implementing their program.

The planning process, and the state plan documents produced, vary greatly from one state to another. The differences are partly accounted for by the kinds of problems characteristic of the state, and the unique goals and areas for priority consideration, and partly by the different needs and aspirations of the planning participants.

There are also commonalities. Planning in most states was directed toward a mixture of formal and nonformal education (although the greater effort has been placed in the

schools). Nearly all states took steps to (1) assess the existing environmental education projects and resources, (2) identify needs and areas for priority consideration, and (3) provide programming recommendations. These findings were then used as guidelines for the remainder of the planning effort and the development of the plan itself.

The experience of state planners over the past four years will be discussed in greater detail throughout this book.

SUMMARY OF STATE PLANNING

ALABAMA

Environmental Education in Alabama --
A Comprehensive Approach (1973)
Alabama Environmental Education Master Plan (1974)

Alabama has, in effect, two state plans. The first was written by the Environmental Education Advisory Council, an agency of the Dept. of Education. Its major focus is on curriculum development for formal education, K-16. Contact: Ms. Erline Curlee, Science Consultant, Dept. of Education, Montgomery 36104.

The second was prepared, under a PL 91-516 planning grant in 1972, by a citizens' group formed under the auspices of the Alabama Environmental Quality Council (the State's coordinating agency for EE since 1968). Its master plan outlines nearly 50 specific objectives in communications, field service, program development and financing to be accomplished in conjunction with the school program. Nine Regional Councils are designated as communication channels between citizens and state government officials and as clearinghouses. Contact: Ms. Martha McInnis, Exec. Dir., Alabama Environmental Quality Association, Box 11000, Montgomery 36111.

ALASKA

Alaska's Planning Guidelines for
Environmental Education (1974)

Prepared by the Dept. of Education, the plan provides recommendations for implementing a "total EE curriculum" and proposes the responsibilities of educational organizations, federal and state resource agencies, and the community itself. The organizational structure calls for a statewide EE Advisory Committee with local community support in the form of Citizen EE Task Forces. Contact: Ms. Jo Michalski, EE Specialist, Instructional Services, Dept. of Education, Juneau 99801.

ARIZONA*

Contact: Ms. Julia Perry, Citizen Advocate, 6301 N. Camino Almonte, Tucson 85718.

ARKANSAS*

Contact: Ms. Bessie B. Moore, Director, Economics and EE, Dept. of Education, Little Rock 72201.

CALIFORNIA

A Report to the California Board of Education by the Conservation Education Advisory Committee (1969)
California State Plan for Environmental Education (1972)
Program for Environmental Education in California Public Schools (1973)

Although the California state plan is a composite of materials dating back to 1966, these three documents provide a profile. The Advisory Committee's recommendations were adopted in November 1969; the May 1972 statement is a progress report; the September 1973 statement represents a workplan to guide their further efforts. The emphasis of the California plan is almost exclusively toward formal education. Contact: Rudy Schafer, EE Consultant, Dept. of Education, Sacramento 95814.

COLORADO

Colorado Interim Master Plan for Environmental Education (April 1972)
Colorado Environmental Education Master Plan (June 1973)

The Master Advisory Planning Council, a citizens' group, received planning grants in 1971 and 1972 which were administered by the Center for Research and Education. This Council was representative of a broad cross section of interests, backgrounds, ages and geographic locations. The first document presents the problems, needs and goals; the second presents a plan revolving around four major citizen-based projects: The Colorado EE Council, an EE Resource Information Clearinghouse, Teacher Preparation for EE, and Media Involvement in EE. Contact: Richard Rocchio, Asso. Dir., Center for Research and Education, 2010 E. 17th Ave., Denver 80206.

CONNECTICUT

Coordinated Action Plan for Environmental Education (March 1973)

Prepared by the State Council on EE, the purpose of the Plan is to facilitate action in the following areas: Assessment, school curriculum, teacher training, vocational training, general education of the public. Contact: Sigmund Abeles, Science Ed. Consultant, Dept. of Education, Hartford 06115.

DELAWARE

Environmental Education in Delaware (1973)

This plan, prepared by the Delaware Conservation Education Association, Inc., was formulated around the basic conceptual scheme for population-environment studies prepared by the Population Curriculum Study at the University of Delaware. Their three basic objectives, in a five-year plan, include teacher education, curriculum development, and adult education. Contact: John F. Reiher, Supervisor of Science & EE, Dept. of Public Instruction, Dover 19901.

DISTRICT OF COLUMBIA

The District of Columbia received a planning grant in 1972, but to our knowledge no plan has yet been developed. Contact: Ms. Carol-Lynne Glassman, Director, Planning Committee for EE, Washington Urban League, 1424 16th Street, N.W., Washington 20036.

FLORIDA

Florida Master Plan and Action Guide for Environmental Education (1970, rev. August 1974)

Prepared by the Bureau of Curriculum and Instruction of the Dept. of Education, this plan calls for the organization of an Advisory Council and a Technical Advisory Committee, consisting of representatives from agencies and organizations in the public and private sector, to work with the State Dept. of Education in promoting a coordinated effort. Major objectives: curriculum development, pre-service and in-service teacher education, manpower training in environmental management. Contact: C. Richard Tillis, Bureau Chief for EE, Dept. of Education, Tallahassee 32304.

GEORGIA

Survival with Dignity (Draft, November 1974)

This plan has been prepared by a state EE Advisory Council, with citizen input through six regional hearings, for presentation to the 1975 General Assembly. Contact: Joe Tanner, Council Chairman, Dept. of Natural Resources, Atlanta 30334.

HAWAII

Hawaii Is Unique (February 1973)

The Citizens' Committee for EE received a planning grant in 1972, supplemented by the State which provided staff and administrative support. The major recommendation is the creation of an EE Service Center to deal with the needs identified

in the state inventory by stimulating and coordinating the activities of existing agencies. Such a center is proposed as a private, nonprofit corporation to permit the administering of private funds as well as contracting for state funds. Contact: Sister Edna Demanche, EE Association of Hawaii, 205 Merchant St., Honolulu 96813.

IDAHO*

Contact: Harry C. Mills, Advisory Committee Chairman, Dept. of Education, Boise 83707.

ILLINOIS

State Plan for Environmental Education (Draft 1974)

Prepared by a citizens' Task Force for EE, the plan includes programming for the entire educational system including community colleges and community service courses. Contact: J. Robert Sampson, Dir. of EE, Dept. of Public Instruction, Springfield 62701.

INDIANA

Although a Governor's Task Force on EE has been at work for some time, no plan has yet been published. Contact: Jack Snell, EE Consultant, Dept. of Public Instruction, South Bend 46623.

IOWA

Iowa Environmental Education Plan (1974)

The plan was prepared by a special subcommittee, appointed by the Governor's Committee on Conservation, comprised of representatives from citizen groups. It provides for formal and nonformal education (K-12, adults, teacher training, environmental management training) and for a data bank and retrieval system. The Dept. of Public Instruction is charged with implementation in cooperation with other organizations concerned with environmental affairs. Contact: Duane A. Toomsen, EE Consultant, Dept. of Public Instruction, Des Moines 50319.

KANSAS

The Center for Environmental Teaching at Kansas State University, the Dept. of Education and the State Advisory Council on EE are presently working together toward the development of a state plan. Contact: John Strickler, KACEE, 2610 Claflin Rd., Manhattan 66502.

KENTUCKY

The Dept. of Education has been working toward a master plan since late 1972 through regional conferences. With the appointment of an EE Advisory Council in July 1974, they are entering the final stages of development and hope to have a plan completed by early 1975. Contact: Billy S. Blankenship, EE Consultant, Dept. of Education, Frankfort 40601.

LOUISIANA

A state plan is in the preliminary planning stages. Contact: Edward W. Dayton, Jr., Supervisor of Science & EE, Dept. of Education, Baton Rouge 70804.

MAINE

Maine State Plan for Environmental Education (July 1974)

Under development for three years by a citizen "writing committee," the plan recommends both formal education in the schools and nonformal education for the general public. It recommends two full-time EE directors, one within the Dept. of Education and one for the University system, to coordinate efforts toward reaching all target audiences. With a grant from the Northeast Environmental Education Development Consortium, the plan was published by the State Dept. of Educational & Cultural Services. Contact: Dean B. Bennett, Director, Maine EE Project, Intermediate School, Yarmouth 04096.

MARYLAND

Report of the Advisory Committee for Environmental Education to the Maryland State Superintendent of Schools (July 1971)

This plan was prepared by a 22-member Advisory Committee appointed by the State Supt. of Schools following a resolution adopted by the Board of Education in 1970 for initiating a planned program of EE in all elementary and secondary schools. Contact: Dixie Ann Pemberton, Chairman, Conservation Education, Natural Resources Institute, Univ. of Maryland, College Park 20742.

MASSACHUSETTS

Environmental Education in Massachusetts (March 1973)

With planning grants in 1971 and 1972, this plan was prepared by an EE Task Force appointed by the Mass. Advisory Committee

on Conservation established under the auspices of the Board of Education. The major recommendation was the establishment of a public trust organization to catalyze and focus the private and public environmental effort in the Commonwealth. The programming targets include: elementary and secondary education, higher schooling, public non-school education, governmental agencies, and general. Contact: Charles E. Roth, Committee Chairman, c/o Audubon Society, So. Great Rd., Lincoln 01773.

MICHIGAN

Michigan's Environmental Future:
A Master Plan for Environmental Education (1973)

The Governor appointed a broad-based task force in 1971 to write a comprehensive, long-range EE plan in response to the recommendations from various citizen and government groups. A planning grant in 1972 provided a staff to aid the task force. Major recommendations: That the Governor (1) establish a State EE Council and a Citizens Advisory Board to coordinate all statewide environmental communications, education, and information programs, (2) request funds from the Legislature for operation of the Council and Advisory Board, and (3) establish Regional Offices to work directly with local groups (schools, industry, agriculture, citizen groups, etc.). A total of 102 specific recommendations are proposed for implementation not only by the state but by private and public groups as well. Contact: B. Ray Horn, Exec. Dir., State Plan Task Force, 555 E. William, Ann Arbor 48108.

MINNESOTA

Environmental Education - A State Plan
for Minnesota (1972)

With planning grants in 1971 and 1972, this plan was prepared by the Minn. Environmental Education Council, an outgrowth of an ad hoc committee appointed by the governor and legislature in early 1971. The plan proposes education programs through both formal and nonformal processes and recommends a definite organizational structure for implementation: the establishment of Regional EE Commissions, corresponding to the State Planning and Development Regions, to work with the State Council. Contact: Robert A. Kimball, Exec. Dir., Minnesota EE Council, Capitol Square Bldg., St. Paul 55101.

MISSISSIPPI*

Contact: James J. Hancock, Supervisor of EE, Dept. of Education, Jackson 39205.

MISSOURI

Endorsed by the Governor, a statewide committee is working with the Depts. of Conservation and Elementary & Secondary Education to develop a state EE plan. They expect a draft by mid-1975. Contact: Jack Roy, Dir. of Curriculum Implementation, Dept. of Education, Jefferson City 65101.

MONTANA*

Contact: Ed Eschler, Asst. Dir. of Basic Skills, Office of Public Instruction, Helena 59601.

NEBRASKA

Planning is completed, but no document has been published. Contact: Ms. Sharon B. Wherry, Dept. of Environmental Control, Lincoln 68509.

NEVADA*

Contact: Richard Miller, EE Advisory Comm., c/o Foresta Institute for Ocean & Mountain Studies, Carson City 89701.

NEW HAMPSHIRE

Environmental Education for New Hampshire - A Plan for Community Involvement (October 1973)

Prepared by the State EE Planning Council under a 1972 planning grant, this plan outlines a procedure for the development of "community EE plans" within the independent school districts in order to promote maximum citizen involvement. Thus, implementation is a matter of local responsibility rather than being administered at the state level. Contact: Wm. B. Ewert, Science Education Consultant, Dept. of Education, Concord 03301.

NEW JERSEY

Master Plan for Environmental Education - A Proposal for New Jersey (1970)

This was the first truly comprehensive state plan in the country, written prior to the EE Act of 1970 (PL 91-516). Produced by the N. J. Council for EE under a state grant, the plan was funded for implementation by the U. S. Office of Education under Title III-306 discretionary funds. It became the model for the USOE's original emphasis that all EE proposals for funding be related to a developed or emerging

state master plan. [The Council was also instrumental in drafting a bill, signed into law in August 1971, which became the first State EE Act in the nation.] Contact: Edward Ambry, N. J. Council for EE, Montclair State College, Upper Montclair 07043.

NEW MEXICO*

Contact: Mr. Bev Graham, Science & Conservation Specialist, Dept. of Education, Santa Fe 87501.

NEW YORK

Third Report to the Governor and Legislature on Conservation Education (April 1973)

This report, prepared by the Temporary State Commission on Youth Education in Environmental Conservation, contains the final recommendations for a statewide plan in EE. This Commission, then a subcommittee of the Senate Committee on Conservation & Recreation, received a planning grant in 1971. Major recommendations for "total community involvement" include a Council on Education in Environmental Conservation to be established within the Executive Dept., a statewide information clearinghouse to be established in the Dept. of Environmental Conservation, and regional EE centers under the leadership of a Coordinator for EE in the Dept. of Conservation. [A draft was circulated throughout the state for testing its feasibility.] Contact: Ms. Nancy Ayers, Susquehanna Environmental Education Assn., 616 Pheasant Lane, Endwell 13760.

NORTH CAROLINA

A State General Master Plan for Developing Environmental Education Programs in North Carolina (March 1974)

This plan was produced by the Governor's Task Force on EE, supported by the staff of the North Carolina EE and Outdoor Beautification Programs, under a planning grant in 1972. The major recommendations for implementation include an EE Advisory Council (a central state organization to be established by the Governor with the assistance of the Dept. of Education and the Board of Governors of the University of North Carolina) and a statewide Environmental Information and Education Network. Programming recommendations include training of environmental scientists and technicians, pre-service and in-service teacher training; K-12 education; public information and agency coordination through a clearinghouse; and regional and local centers, study areas, and laboratories. Contact:

Thomas Baines, Dir., N.C. Environmental Education & Outdoor Beautification Programs, 410 Oberlin Rd., Raleigh 27605.

NORTH DAKOTA*

Contact: George Fors, Science & Mathematics Consultant, Dept. of Public Instruction, Bismarck 58501.

OHIO*

Contact: Eugene Knight, EE Supervisor, Dept. of Education, Columbus 43215.

OKLAHOMA*

Contact: Howard T. Potts, EE Specialist, Dept. of Education, Oklahoma City 73105.

OREGON

A Proposed Plan of Environmental Education for the State of Oregon (November 1970)

One of the earliest state plans, it was prepared by the Conservation & Outdoor Education Advisory Committee for the Dept. of Education. Three priority recommendations were made as the initial stages of implementation: a full-time position of EE Specialist in the Dept. of Education, the training of a core of EE instructors for teacher training, and the establishment of a State EE Center. Although almost totally limited to formal education, five primary areas are listed as the framework of an overall approach: program and curriculum development, teacher training, a network of educational facilities, community education, and public understanding and support. Contact: W. R. Nance, EE Specialist, Dept. of Education, Salem 97310.

PENNSYLVANIA

Report: Pennsylvania Environmental Education Advisory Council (January 1974)

The Pennsylvania EE Advisory Council was established in early 1973 by the Depts. of Education and Environmental Resources. This preliminary plan, containing recommendations for a broad-based EE program for K-12 and teacher education specifically, is expected to become part of an Environmental Master Plan for the Commonwealth still under development by the Dept. of Environmental Resources. Contact: John Hug, Chairman, EE Advisory Council, c/o Western Penna. Conservancy, RD#1, Box 97, Mill Run 15464.

RHODE ISLAND

A Proposed Plan for Environmental Education in Rhode Island (May 1974)

This proposed plan was prepared by Ecology Action for R.I., a nonprofit organization working with a steering committee and a citizens' advisory council, under a grant from the Northeast EE Development Project (a consortium of nine states under Title V, ESEA). The plan outlines a structure consisting of an EE Coordinator within the Dept. of Education, an EE Advisory Council, and a Clearinghouse to be created and supported by state legislation. It also outlines a 4-year program of action in both formal and nonformal education, in-service training for education and non-education personnel, land management, environmental study facilities, etc. [The plan has been submitted to the Board of Regents and the Dept. of Education for review and adoption.] Contact: H. Wells French, Consultant on Program Development, Dept. of Education, Providence 02908.

SOUTH CAROLINA

Committees are now being organized to begin the design of a state plan. Contact: Ms. Alice Linder, EE Consultant, Dept. of Education, Columbia 29201.

SOUTH DAKOTA*

Contact: Robert Miller, Dir. of EE, Dept. of Public Instruction, Pierre 57501.

TENNESSEE

Tennessee Master Plan for Environmental Education (Draft, September 1973)

The initial planning effort was begun in 1971 under the auspices of the Depts. of Education and Conservation. A planning conference in 1972, attended by representatives from all segments of the constituency, produced overall recommendations for a coordinated plan. In 1973 a writing conference structured these recommendations into a workable document. The plan outlines specific roles for educational organizations, state and federal agencies, and civic, professional and business groups. The other major provision of the plan calls for the Depts. of Education, Conservation, and Public Health to support a legislative package for EE in order to provide the funds and structure for carrying out the program.

Contact: R. Jerry Rice, Div. of Field Services & Resources, Middle Tenn. Regional Unit, Dept. of Education, Smyrna 37167.

TENNESSEE VALLEY AUTHORITY

An EE Planning Unit has been established to develop a master plan for the TVA agency. Jonathan Wert, Chairman of the Unit, developed a process model as a doctoral dissertation which is considered a potential basis for the plan. Contact: Jon Wert, EE Specialist, TVA, Knoxville 37902.

TEXAS

A New Environmental Ethic, Texas State Plan for Environmental Education (March 1973)

The Texas Advisory Council on EE was appointed by the Governor in mid-1971 to develop a statewide coordination and leadership mechanism for EE. It received planning grants in 1971 and 1972 as well as support from the Governor's Office, Texas Education Agency and Coordinating Board, Texas College and University System. Their plan recommends an Office of EE within the Dept. of Community Affairs with regional centers to plan and coordinate both formal and nonformal EE activities, a clearinghouse, library, and speakers bureau. Contact: Terry Leifeste, Office of the Governor, Div. of Planning Coordination, Austin 78711.

UTAH

No large scale effort has yet been generated in state master planning; present efforts are limited to organizing a district EE committee in each LEA. Contact: Richard Peterson, Specialist in Science Education, Board of Education, Div. of Technical Assistance, Salt Lake City 84111.

VERMONT

Vermont expects to begin work on a master plan in the fall of 1974. Contact: John E. Stevens, Science & EE Coordinator, Dept. of Education, Montpelier 05602.

VIRGINIA*

Contact: George Burton, Asst. of Supt. for Instruction, Dept. of Education, Richmond 23216.

WASHINGTON

A State Plan for Environmental Education (1970)

The development of a preliminary plan was made possible thru the cooperation of the Depts. of Public Instruction and Natural Resources. The organizational structure recommended for implementing the plan includes an Advisory Board on EE, an inter-agency network, and establishment of the position of Supervisor of EE in the Office of the Supt. of Public Instruction. Contact: David Kennedy, Supervisor of EE Programs, Dept. of Public Instruction, Olympia 98504.

WEST VIRGINIA

West Virginia is still attempting to expand EE under the guidelines of their Departmental position paper of May 1971, but hope to make some progress in state master planning during 1975. Contact: Robert S. Patterson, Director of Instruction, Dept. of Education, Charleston 25305.

WISCONSIN

Environmental Education in Wisconsin:
A Foundation for Conserving Environmental Quality (Second Discussion Draft, July 1974)

Prepared by the Citizens' Advisory Committee to the Wisconsin EE Council, under a 1972 planning grant and state funds, this draft has been circularized to (1) gain statewide discussion of the proposed goals and initial program priorities and (2) open the final planning process to the contributions of those who would share in its implementation. The plan details a 3-dimensional approach: Who should participate in EE, dividing the population into 12 major sectors; how to improve EE, through teacher training, adult education, instructional TV, curriculum development, etc.; and what environmental issues should be dealt with. Contact: David W. Walker, Exec. Sec., Wisconsin EE Council, 610 Langdon St., Madison 53706.

WYOMING*

Contact: Bill Edwards, Laramie County Community College, Cheyenne 82001.

---

*As far as we know, there is no EE planning going on in these states as far as a state master plan is concerned.

CHAPTER 2

DEFINITIONS AND MEANINGS BASED ON ASSUMPTIONS OR PHILOSOPHY

There are real problems both in defining and in failing to define words or terms. One can get hung up and create even more uncertainty by attempting to define them. On the other hand, definitions are expected and many times required when we want others to join with us in our efforts.

Let us take a moment, then, to expose some of the jargon used here, providing some explanations of what *we* mean by certain words or terms, and at the same time surface some of the assumptions and philosophies which underlie much of the work done in statewide planning for environmental education.

The term *environmental education* may be the most difficult of all. A recent definition by the U. S. Office of Education appeared in their 1973-74 guidelines for writing proposals.[1]

WORKING DEFINITION 1
(emphasizing process and theory)

> Environmental education is the process that fosters greater understanding of society's environmental problems and also the processes of environmental problem-solving and decision-making. This is accomplished by teaching the ecological relationships and principles that underlie these problems and showing the nature of the possible alternative approaches and solutions.
>
> That is, the process of environmental education helps the learner perceive and understand environmental principles and problems, and enables him to identify and evaluate the possible alternative solutions to these problems and assess their benefits and risks.

---

[1]Department of Health, Education and Welfare, Office of Education, *Environmental Education Handbook* (PL 91-516), 1973.

It involves the development of skills and insights needed to understand the structure, requirements, and impact of interactions within and among various environmental entities, subsystems, and systems.

WORKING DEFINITION 2
(emphasizing content and purposes)

The term environmental education means the education process dealing with man's relationship with his natural and man-made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment (from the Environmental Education Act of 1970).

That is, environmental education is the process of inquiry into both the specific and general environmental implications of human activities viewed from the perspective of social needs and values as they relate to general public policy.

An earlier but still very useful definition is the one prepared by Dr. William B. Stapp, environmental educator from the University of Michigan:

Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

Another helpful source is the state plan documents themselves. While some adopted definitions or descriptions prepared by others, most made at least one attempt to provide a unique description. Colorado articulated a rather comprehensive one:

Environmental education in Colorado is that which

- studies the interdependencies between man and other living and non-living elements of his environment;
- promotes an understanding of the capability of individuals to significantly alter their life support system, both positively and negatively, and therefore illustrates the need for them to assimilate values and attitudes that are conducive to the maintenance of a quality environment;

- emphasizes that there are no simple solutions to complex environmental problems, that trade-offs are involved in all decisions, and that the socio-economic effects of all corrective actions must be properly accounted for before such actions are taken;
- makes accurate environmental information that presents all sides of environmental issues available to individuals so that they can rationally decide for themselves their own positions;
- teaches the skills needed to properly identify environmental problems and to intelligently work toward their solutions;
- provides real-life learning experiences for the individual in a variety of learning environments other than lectures;
- is part of all academic disciplines rather than a course in itself; and
- furnishes information about activities through which individuals can become personally involved in improving environmental conditions.

Most definitions, however, fall short of explaining environmental education as it must be used as a part of planning, i.e., with an orientation toward the future. In that light we would like to add the following statements. Given a balanced set of judgments and projections about environmental conditions, the learner must:

- Make value judgments and select the future environmental conditions suited for him.
- Seek or develop alternative solutions which are most likely to result in the desired future environmental conditions.
- Use his knowledge and understanding of ecological concepts and principles in making decisions about desirable future environmental conditions and in developing or selecting alternative strategies for achieving these conditions.
- Take action (alone or with others) to implement a selected solution or set of solutions to environmental problems.

In defining *master planning*, probably the place to start is with the word *planning*. Let's see how it is used among those in education.

"Planning is a process of determining 'where to go' and identifying the requirements for getting there in the most effective and efficient manner possible."[2] A very practical and to the point definition: "A plan is a predetermined course of action."[3] A systems designer describes it as follows:

> A goal is set, a group of alternatives is created, each alternative is scanned as to whether it will or will not lead to the goal, one of the alternatives is selected, the plan is implemented, and the decision maker checks to see how well the plan worked. The last piece of information is used to control the operation of the plan as well as to plan better in the future.[4]

It is this systematic approach that we will use to describe the planning process. *Master planning* implies an effort which may encompass or be an umbrella for a number of subsidiary plans having a more specific but interrelated focus -- on particular groups of people, geographic regions, content areas, or whatever.

The meaning of *statewide* seems fairly clear, but as an assumption it presents certain problems. For example, in terms of geography it was extremely difficult to do real statewide planning in Colorado because of the overwhelming pressure to center our attention on the Denver metropolitan area. Nor were we able to plan effectively for or with the ethnic minorities or members of the labor movement. Similar restrictions on what "statewide" means are encountered in other states.

The terms *process* and *content* should be considered together because they are better described by comparing them. The term *process* should be viewed as the methods, procedures and means used to accomplish the planning task -- the "how." *Content*, on the other hand, is made up of the data, information and results of the task -- the "what." These two words take on additional meaning, however, as assumptions or philosophy. Look again at the two USOE working definitions of

---

[2]Roger A. Kaufman, *Educational System Planning*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1972, p. 6.

[3]Preston P. Le Breton and Dale A. Henning, *Planning Theory*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1961, p. 7.

[4]C. West Churchman, *The Systems Approach*, Dell Publishing Co., New York, 1968, p. 147.

environmental education; one has a process focus, the other a content focus. People pick one or the other because of their assumptions about what environmental education is or because of their philosophy regarding process or content. It is a matter of emphasis.

Clearly, during the conference in Estes Park more time was spent on issues reflecting the process than on content per se. This book is primarily about process. The issue that most planners raise, once their plans are completed, is *how* can any of what was planned get implemented -- a bias toward process.

One explanation for this apparent bias, especially during the past few years, is that content has not always been clear; and in many cases when it was clear, it was threatening. It has been popular to propose changes in the process of education; John Dewey did it as early as the 1930's and it has been a major focus of educational attention ever since. However, we have not focused the same amount of attention on the kinds of changes in content that are now being proposed by environmental education. To continue to propose that we change the process of education, and at the same time to propose these kinds of changes in the content or substance of education, is at least difficult to accept and may be threatening as well. Compare the definitions and explanations of environmental education with the traditional notions about education. The following description of "school," taken from a major education psychology textbook points out the dilemma:

> The school is the institution in our society organized and supported to promote efficient learning -- to assist learners in acquiring and improving the many cognitive and psychomotor abilities *which previous generations required thousands of years to generate.*[5] (The italics are ours.)

Most of the history of educational thought in this country has been based on the premise that the major purpose of education was to pass on to the present generation the knowledge and skills of the past. Very little attention was paid to attitudes and values or the need for a different future. Environmental education places a great deal of its focus on both these areas and is, therefore, contrary to much of what people believe to be education.

---

[5]Herbert J. Klausmeier, "Learning and Human Abilities," *Educational Psychology*, Harper and Row, New York City, 1961, p. 3.

We use the terms *formal* and *nonformal* education to differentiate between education that occurs in the academic institutions and that which occurs outside formal "schooling," through newspapers and television for instance.

Coming out of the discussion of process and content are the terms *participative* and *grass roots*. Both terms are popular today and both were used by planners in answering the questionnaire and at the Estes Park Conference to describe and explain the nature of their process. In Colorado we called it "broad-based citizen representation." The term statewide implies participation; the emphasis given to the "needs of the people" also implies a philosophical bias toward the participative approach and getting grass roots support. This contrasts with the *elite* approach where a few so-called experts prescribe what the "public" should know and do.

PART TWO

PRE-PLANNING

The purpose of this section is to direct the planner's attention to some issues that should be considered prior to any attempt to launch a planning effort in environmental education.

CHAPTER 3

CONTROVERSIAL ISSUES RE ENVIRONMENTAL EDUCATION PLANNING

A variety of very important, even critical, issues -- controversial assumptions, if you will -- should be raised and discussed prior to any attempt to launch a planning effort in environmental education and to predict its chances of success. Inasmuch as some or all of the issues presented here will certainly crop up, especially if the planning is to involve citizen participation, it is wise to face them squarely in the beginning.

The planner should examine his task in light of the assumptions on which he will be operating. It is hoped, therefore, that before embarking on a major planning program, or going further with an effort under way, he will look at the issues presented in the following questions, read the discussion for any insights in the following questions, read the discussion for any insights it may provide, and attempt to answer them in local, specific terms. (Hopefully, these will raise other issues and questions relevant to the success or failure of his own effort -- to be resolved or at least examined.)

These questions and discussions do not necessarily represent our particular point of view. However, they were raised at one time or another during our statewide planning efforts in Colorado. Our answers at that time now seem to have been shallow; certainly they were biased in favor of the particular approach we were using. Pondering these issues seriously in the beginning may not have changed our direction, but may have helped significantly in the carrying out of our task and the way we explained it to those whose involvement we were seeking.

1. *Can we predict that, as a result of environmental education master planning, there will be any observable change in the environmental conditions or any observable solutions to environmental problems?*

There is considerable debate over this question. The statements of the planning goals and the purposes of the mas-

ter plan document presented in this report may seem to provide ample justification. But the planner should examine carefully the conditions in his state to determine if and to what extent such an endeavor is relevant and appropriate.

Most rationales given for providing environmental education seem to say, in one way or another, that the world's environmental problems and undesirable conditions exist because people do not have the right attitudes, values and beliefs required for maintaining a quality environment -- or that it is people's behaviors which either cause or prevent our solving environmental problems. An assumption many times made is that the answer is to be found in education. However, much of the data collected on environmental problems, conditions and concerns has been filtered through the prism of education, and the true colors may be faded or distorted. In some cases the data indicates that environmental education may very well not be, as they say in medicine, "the drug of choice" in attempting a cure.

Perhaps environmental problems and their solutions are just too complex for education alone. A more realistic view of education's role might be to consider it as only one element in a complex set of social, technological, economic, legal and other approaches available for solving these problems. Our failure to examine all of the forces which contribute to solutions to environmental problems may be a real weakness in what we are all doing.

Agreement about what we actually want to do about some of the conditions of the environmental and ecological balance has not yet been reached. Not being able to agree on the problems or their causes pretty much makes it impossible to agree on the solutions. What we may be doing is taking the easy way out by advocating the applications of education. But, given the realities of the people's concerns, education as a solution may fall way down on the list of things to do, or at least it may have its focus narrowed considerably.

In coming to grips with clearly defining and describing the environmental conditions, one may find that the problem is one of culture, requiring massive efforts to change; or it may be one of inertia, run-away technology which may or may not be reversed or slowed by education. The so-called problems with individual behavior may be simply the result of a people's efforts to adapt to their environment, which may in turn cause still other environmental problems. The puzzle of which comes first, the chicken or the egg, raises serious questions about the ability of education to make a difference.

This is not to say there is no need for or value in education. But as environmental educators and planners perhaps we should practice what we preach and apply a multidiscipli-

nary approach to our selection of alternative solutions. In any case, the initial task of a planning effort is to resolve the dilemma of priorities. It should determine the extent to which environmental education is a part of an overall program of environmental management and what role it plays in the overall scheme.

2. *Is planning as good or better than the other uses to which our education time, money and resources can be applied?*

Within the circle of people who contributed to this book, there is the belief that planning *is* as good or better than other educational alternatives, based on evidence we believe valid -- that is probably why many of us engage in it. But there are other alternatives to be examined, described and compared with planning.

Even given agreement as to the nature and magnitude of the problems, conditions and concerns, there remains a controversy as to what the *needs* are and whether planning has a high enough priority as compared to other means of attacking the problems. For many, it is an issue of planning versus doing, i.e., a fundamental conflict between the short-range tangible and obvious results versus the long-range and less obvious results. For example, since teacher training and curriculum development seem to be obvious needs, why not just get on with the job? There are those who believe that by accepting education as a solution, we are accepting a generally long-range view, and that if we choose education planning, we risk postponing tangible and visible results even more.

3. *Is there any set of conditions or circumstances which in some way determine the proper time to start a master planning effort?*

Many believe that premature or improperly considered starts to master planning efforts may end in failure. Some have indicated that if adequate start-up requirements are not present, or are not likely to occur within a reasonable time, it is probably not realistic to expect anything approaching the outcomes described in this book. Others, however, point out that because master planning takes such a variety of forms some initial but important steps may lead to acceptance for the whole idea.

Several of those who expressed their concern in this area made an initial attempt, by looking back on their own experience, to prepare a set of general guidelines for determining state readiness. (The discussion on planning climate on page 59

is based on their work.)

4. *Is it always wise to attempt to prepare a statewide master plan?*

There are those who have expressed the view that incorrect location or improper geographic focus can seriously hinder or even destroy effective planning. It seems perfectly clear that in Colorado the preeminence of Metropolitan Denver, an area with some 70% of the state's population, acted as a magnet to the planners' efforts drawing them away from their best laid plans to adequately deal with the remaining 97% of the state's geographic area.

By the same token, is a statewide plan in New York really possible given the nature of the demographic, political and economic separation that exists between New York City and the remainder of the state? In Illinois with Chicago? In California, between north and south? Similar circumstances exist in the majority of states. Given the limited amount of time, money, equipment and other resources, one must make sure to add the geographic-based demographic, social, political and economic conditions to the set of uncontrollable factors to be taken into consideration.

5. *Are we as educators willing to take a stand and begin describing, in specific terms, the environmental problems and conditions?*

Many people concerned about solving environmental problems and changing environmental conditions are exasperated with the educator's unwillingness to forthrightly answer the above question. Some express the view that the answer is probably "no" and insist that education about the environment must strive to utilize a balanced approach, presenting both sides to all issues.

Looking at it another way, everyone (with a few exceptions) seems to agree that there are environmental problems, but most are able to describe them only in global terms. One reason for this is lack of information; another reason is that it is safer that way. Real disagreement seems to arise about the nature or importance or causes of a problem whenever the description of the problem becomes specific. In an attempt to cope with this situation, problems and conditions are often described in such general terms that it is impossible for them to be controversial or for anyone to take action on them; to describe them in any other way is to set up threatening conflicts. There is little evidence that education is really ready, able, or willing to resolve such conflicts.

Educators can take a stand against a problem and for its solution, but should they advocate one solution over another? Perhaps their role should be to effectively present the alternatives and facilitate examination of relative merits. In the case of value conflicts, should educators advocate certain values, present the range of known values, or help people find and clarify their own values? No one seems clear about which of these, if any, is appropriate for the educator.

No matter what the outcomes, however, educators must begin to find ways to come to grips with conflict and problem specificity or they will have to make some alterations in their definitions and descriptions of environmental education.

6. *Is education the salvation or the cause of the fix we and our environment are in?*

Here the assumption is that education does play an important role in addressing environmental problems and conditions, arguments for other solutions to the contrary. The issue is the nature of education and its role as either cause of or solution to these problems.

To many environmentalists, formal education is the cause of the problem because it has succeeded in passing along from one generation to the next a complete set of ecologically unsound cultural values and social behaviors. Among these are the capitalistic economic system which places profit above all other concerns, the attitude that nature is to be exploited and that growth is to be valued over conservation, and the idea that bigger is better. On the other hand, many businessmen and others criticize the education system for failing to pass along to the present generation the cultural values of a capitalistic economic system, which they say is the undoing of our "way of life."

Therefore, when one talks about the purpose and role of environmental education, one is compounding an already difficult situation. Finding a way to deal with this issue is central to the success or failure of an environmental education effort.

7. *Is environmental education ahead of its time?*

There is a real possibility that environmental education, and thus planning and support for plan implementation, is ahead of its time. Maybe the problems that people see in the environment are too immediate for the long-range approach to solutions offered by education. Even the argument that education is needed if people are to support the required social and political management actions (laws, policies, technology)

is open to question and debate.

8. *Can support for environmental education be a cop-out on efforts in other areas of environmental problem solving?*

Perhaps the best way to present this issue is in terms of how it is most often raised, legislation and money. An often-asked question is "Why doesn't the legislator do more about environmental education?" Even assuming the legislator understands what the potential long-range effect of environmental education could be in terms of change, one can make an excellent argument that given the system of education delivery (schools and media) legislative support for environmental education probably will not result in any change. Legislation for environmental education, then, which would be seen by most people as a giant boost for the cause, could be the best "out" for the legislator who doesn't want to bite the bullet on tough environmental issues like land-use planning, the management of energy, water, transportation, etc.

Education can be an important complementary element in the area of environmental management. However, the point of this issue is that adequate attention must be given to all facets of environmental management, rather than allowing education to be the only approach used.

9. *Are the benefits of master planning, both in terms of the document produced and the process of developing it, worth the commitment of time, money, and human resources that are required to do an adequate job?*

This issue is fundamental. An important consideration in this regard is the hazard of over-planning, taking too much time and using too many resources to refine the plan and too little time and too few resources in implementing its recommendations. This hazard is implicit in any approach attempting to separate planning from implementation. Too many comprehensive planning projects have been simply ground exercises, self-satisfying to the planners. The plan was the end in itself.

The time, money, and human resources to do an adequate job must lead to a plan that can be judged by a variety of criteria to have succeeded. This may take a few years to realistically determine, although some say that we may never assess the direct benefits of the present master planning efforts. In any case, for most planners, the worth of the master plan effort lies in the extent to which it meets its own goals and objectives.

These questions are open-ended. The discussion is not meant to provide answers; each case is presented only as food for thought. It is important to its success that the planner feel confident that his answers to the questions are such that it is clearly worthwhile to launch a planning effort. Admittedly, this will require some "hip shooting" and some educated guesses initially; but if one can begin early to involve key, knowledgeable people, the beginnings of the answers can be determined.

PART THREE

THE PLANNING PROCESS

We have chosen to use the planning process as the vehicle to present this discussion of environmental education planning. It is clear that most of those engaged in master planning for environmental education employed some form of goal-referenced system with which to carry out their task. The system we are using here is based on a model developed by the Center for Research and Education.

The next several chapters will attempt to explain the "what" and "why" of such a system.

PART FOUR will cover the "how."

CHAPTER 4

A GOAL-REFERENCED MODEL

This chapter will provide an overview of the goal referenced planning process; a more detailed explanation of each element will follow in subsequent chapters.

The system begins with the collection and study of data concerning the problems and needs. This information is translated into general goals, which are then spelled out in terms of measurable objectives or outcomes expected to be attained. Strategies are developed to achieve these objectives. Built-in, program specific evaluation instruments and measurement techniques are employed to provide (1) continuous assessment of progress, (2) a feedback mechanism for self-correcting improvement, and (3) comparison of objectives achievement with the baseline data.

This systematic process insures that the functions of planning, implementation, and evaluation become an integrated operating structure leading to successful achievement of program goals. A simple schematic representation appears in the following figure:

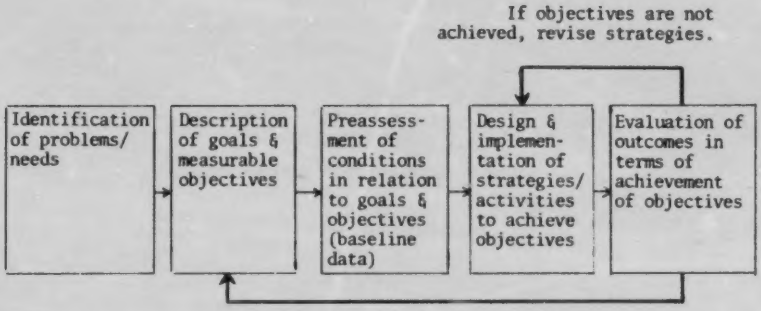
If objectives are not achieved, revise strategies.
Identification of problems/ needs
Description of goals & measurable objectives
Preassessment of conditions in relation to goals & objectives (baseline data)
Design & implementation of strategies/ activities to achieve objectives
Evaluation of outcomes in terms of achievement of objectives
As objectives are achieved, augment them or conclude the program.

Figure 1.

Goal-Referenced Planning/Implementation/Evaluation Model

A competent needs assessment through the collection and analysis of field data will determine to a large degree the relevancy and impact of the program activities. With this approach, a specific activity is geared to achieve a given objective based on proven need, not simply because the activity "looks good." This sounds elementary, but it is surprising how many projects are undertaken without a sound analysis of this kind, especially in terms of the interests and concerns of the people to be affected by the program.

This data is translated into general goals, which give direction to the program and establish achievement parameters. The objectives, or performance indicators, are the visible or directly assessable conditions one is willing to accept as evidence that the goals are being met. This step includes the development of specific measurement instruments and techniques, data collection procedures, and methods for data analysis and interpretation. These instruments and techniques are first employed in a pre-program assessment to establish a baseline for the level of attainment of the objectives, and are subsequently used in post-program assessment to establish the extent of change which occurred as a result of the activity.

Alternative strategies for achieving the objectives are planned and carried out according to a systematic sequencing procedure. Evaluation of the effectiveness of the program activities is then quite straightforward. Accountability is built into the system in terms of measurement of achievement against specified objectives.

For planning efforts which conclude with the written "Plan," the systematic process described can be applied effectively to the carrying out of the planning task itself. However, for purposes of this book, we are including the implementation of the programs recommended in the Plan. An outline of how this method could operate in the planning, implementation and evaluation of a comprehensive state planning effort for environmental education is shown in Figure 2.

By far the most complete description we have seen of a full set of planning steps, from inception and approval to implementation and long-range evaluation and modification, is to be found in the doctoral dissertation of Jonathan Wert,*

---

*Jonathan M. Wert, "A Process Model Showing How a Federal Government Agency, such as The Tennessee Valley Authority, Can Utilize Its Resources to Cooperate with Other Agencies in the Development of Environmental Education Programs for the Tennessee Valley Region" (doctoral dissertation, University of Alabama, 1974), pp. 34-65.

I. PRELIMINARY WORK

- Resolve issues and determine operational procedures
- Determine planning climate
- Establish goals of planning process
- Select planning participants
- Secure funding & other planning resources

II. SITUATION ASSESSMENT

- Determine environmental problems, conditions & concerns
- Determine educational problems, conditions (existing efforts) & needs
- Ascertain environmental education resources -- present & future

III. BUILDING OF PLAN

- Establish goals & objectives and program recommendations for environmental education plan
- Conduct pre-assessment; determine constraints
- Develop strategies & activities (with budgets) for implementing program recommendations
- Determine resource needs and secure resource commitments
- Public review as appropriate

IV. IMPLEMENTATION OF PLAN

- Secure implementation commitments
- Publish plan documents
- Public involvement & review as appropriate
- Carry out recommended programs & strategies

V. EVALUATION & FEEDBACK

- Apply tests & measurements to learners
- Evaluate operation of the programs
- Prepare and deliver feedback reports

VI. CONTINUATION, MODIFICATION OR CANCELLATION

- Program strategies
- Goals & objectives

Figure 2.

Outline for Planning/Implementation/Evaluation of an Environmental Education Plan

chairman of the Environmental Education Planning Unit for the Tennessee Valley Authority.

A more detailed discussion of assessment, goals and objectives, strategies to achieve the objectives, and evaluation are presented in the following chapters. How to put it all together is covered in PART FOUR.

CHAPTER 5

ASSESSMENT -- *Where are we now?*

Assessment of the situation in a particular state or region is a first step in the systematic process we are using to discuss the implications of environmental education planning. It answers the first of four questions planners ask:

1. Where are we now?
2. Where do we want to be?
3. How do we get there?
4. How do we know when we have arrived?

Situation assessment revolves around the collection of information about (1) environmental problems and needs, (2) human problems and needs, and (3) the resources presently available, and predicted to be available in the future, with which to address these problems and needs -- especially in the area of education.

It is important that such data be collected because we must reexamine, in the light of these findings, the decision to move ahead with environmental education planning. We must ask the question, "Given the problems, conditions and concerns, and with all else taken into consideration, is environmental education and environmental education planning the best thing we could be doing now -- and why?"

Another reason assessment is important in the beginning of the process is that we want to know what is motivating people, who is concerned about what, and to what extent. When we can determine the areas or problems with which people are highly concerned, it increases our chances for success by directing our efforts at these areas. The converse is true in areas where there is low concern. By knowing who, what and to what extent, we can capitalize on areas of high opportunity with the appropriate people and work to build concern for issues where this is seen as important.

Through this data collection process, the planner also develops baseline information regarding the present situation in education and the environment.

For the purpose of this book we will focus on *problem* identification, which is seen as being somewhere between a

statement of environmental conditions and an expression of people's concerns. By focusing our attention on the gathering of information about problems, we can work backwards into a description of the conditions or forward into determination of concerns.

One can contrast conditions and problems largely on the basis of the difference in objectivity. One can contrast problems and concerns on the basis of the degree to which people are willing to either rank-order or to indicate on a scale the extent to which they see the necessity for attacking or solving a given problem. Conditions are based on facts; concerns are expressions of the conditions that people know and care about -- conditions people wish to maintain because they are good or beneficial to them or conditions people wish to remove or escape from because they are bad or damaging to them. Concerns, like problems, are very value loaded and depend heavily upon the attitudes and beliefs of the people examining them.

The area of problems, conditions and concerns is a complex one. To illustrate, let's look at three statements made in the Environmental Education Act (PL 91-516).

First is an expression of the basic problem:

> The deterioration of the quality of the nation's environment and of its ecological balance threatens to pose serious problems with regard to the strength and vitality of the people of this nation.

Here is a second level, the knowledge and understanding of the people about the problem stated:

> In part, these problems are a result of poor understanding by the general citizenry of the nation's environment and of the need for its ecological balance.

Finally, there is a statement about still a third level, that of resources for attacking the second level problem:

> This is due in part because of a lack of resources for educating and informing the people of the nation in these particular areas.

For purposes of a master plan, it is important to gather information about the problems in each of these three levels.

It seems important, too, to give attention to both the present and potential problems, conditions and concerns. By examining both, one can better assess the likelihood that environmental education will contribute to the changes sought.

One should crank into any analysis of this kind the technological, economic, social, legal and other alternative approaches. along with that of education, in determining the best use of time, money and other resources.

Because any statements describing problems and concerns are heavily value-loaded, there will be a variety of perceptions of the problems as well as varying levels of concern. There will even be a difference as to what constitutes a problem. And when there is agreement on the problem, there will still be differences as to their nature, intensity or magnitude. There are also differences about the comparative value or place in a rank-ordering that various problems should receive.

In still another context, we find that there is a discrepancy in the way people perceive problems for today and what they see regarding the problems of the future. In part, this may be because people are not used to or skilled at making decisions of this kind, i.e., looking into the future and assessing the world as they would like to have it as compared to the way it is today.

Another element in situation assessment has to do with the planning climate -- questions concerning the level and intensity of awareness, interest and commitment apparent in the state, the political and economic situation, the nature of the resources available, etc. This information is critical as it forms the framework within which the work must be accomplished. It is also useful in identifying the constraints on the planning effort.

A more detailed discussion of *how* to collect the information required about problems, needs, resources, and planning climate is included in PART FOUR - MAKING IT HAPPEN.

CHAPTER 6

GOALS AND OBJECTIVES -- *Where do we want to be?*

Accurate identification and careful articulation of the specific environmental and educational problems, conditions, needs and resources through the situation assessment will greatly influence the relevancy and impact of the program activities. The specification of goals and objectives, therefore, is the critical link between the information collected and the development of the strategies or program activities.

The goals give overall direction to the program; the objectives are stated in observable and measurable terms, including the conditions one is willing to accept as evidence that the goal is being met. Each intended outcome (objective) is written in such a way that it includes the following elements:

- The specific change that is expected to occur as a direct result of the activity.

  If this is in terms of an attitudinal change or something to be learned by a group of people, the specific behavioral change would be defined. If, on the other hand, the intended outcome is in terms of some physical or situational modification, the objective change in that situation would be described. The important element here is that these objectives are specified in terms of changes that are observable and measurable.

- The criterion or standard which the intended change is expected to achieve. This would be stated in terms of the number of people expected to change, the quality or extent of the expected physical change, etc.

There are two types of goals with which planners must deal. Perhaps the schematic representation in Figure 3 will serve to clarify how these two types of goals fit into the overall system.

GOALS AND OBJECTIVES FOR THE PLANNING PROCESS ITSELF follow directly from the study of the issues discussed in Chapter 3 and the basic philosophy underlying the entire planning effort. For instance, the planner has a ready-made goal

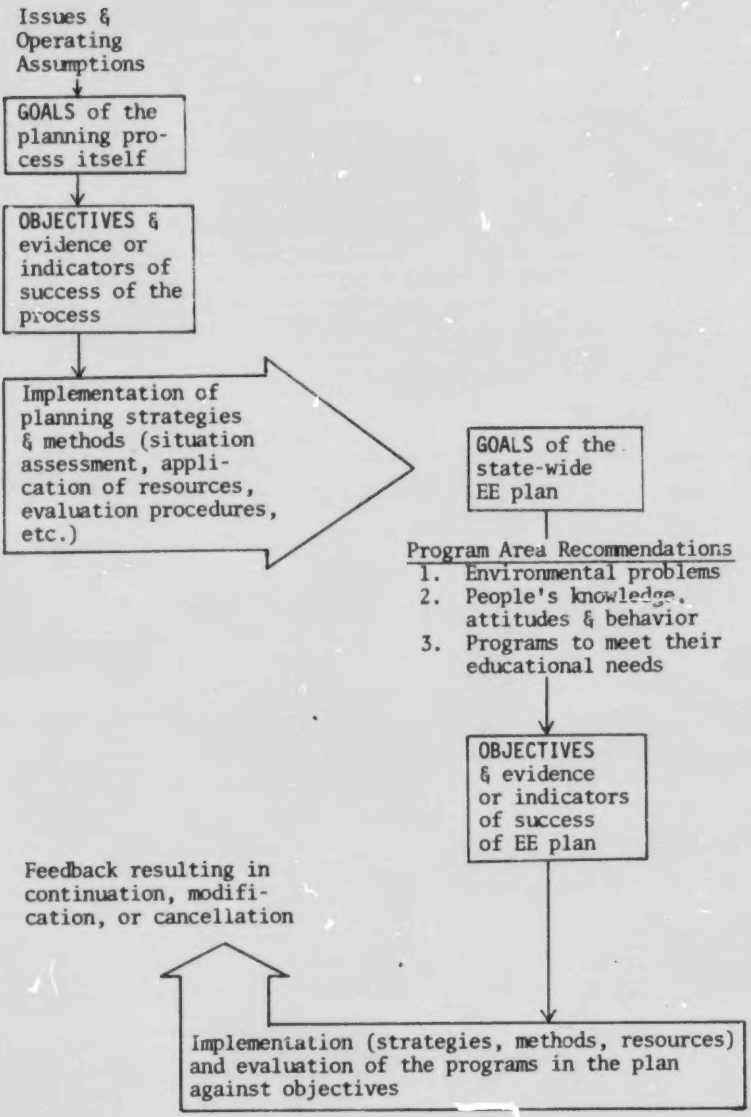
Issues & Operating Assumptions
GOALS of the planning process itself
OBJECTIVES & evidence or indicators of success of the process
Implementation of planning strategies & methods (situation assessment, application of resources, evaluation procedures, etc.)
GOALS of the state-wide EE plan
Program Area Recommendations
1. Environmental problems
2. People's knowledge, attitudes & behavior
3. Programs to meet their educational needs
OBJECTIVES & evidence or indicators of success of EE plan
Feedback resulting in continuation, modification, or cancellation
Implementation (strategies, methods, resources) and evaluation of the programs in the plan against objectives

Figure 3.

Goal Structure

implicit in a decision to involve a broad cross section of the citizenry in the preparation of the state plan.

GOALS AND OBJECTIVES OF THE PROGRAM resulting from the planning effort are formulated directly from the data collected in the situation assessment phase described in the previous chapter.

A distinguishing feature of this goal structure is the three-level set of program goals and objectives. Inasmuch as we are concerned with a problem-centered planning process, we should write goals for all three levels of the problem raised in the Environmental Education Act: (1) the nation's environment, (2) people's knowledge and behavior, and (3) resources for educating the citizenry.

Another distinguishing feature is the use of program area recommendations as a link between goals that are general and objectives expressed in terms that are measurable. Our experience with the participative planning process provided evidence that it is easier for the participants, many of whom are novices in the realm of environmental education and planning, to recognize and understand a program statement than to recognize or comprehend a set of definitive objectives. Obvious examples of program area recommendations are:

- An environmental education resource clearinghouse
- Teacher training
- Involvement of media

It is also easier to explain objectives and criteria for indicators of success in terms of specific program descriptions than in terms of general goals. Thus, the ability of those involved in planning who are not educators to participate fully in the review process is enhanced.

It is extremely important that the planner establish a good set of goals and objectives (and related strategies) for the planning effort as well as for each of the recommended program areas. Without well thought-out and well articulated goals, there may be much activity but in no particular direction. If the planner and those with whom he works are to stay on course, he must articulate clearly where he wants to be when the effort is concluded.

More specific information regarding goals and objectives for a state planning effort in environmental education will be found in PART FOUR.

CHAPTER 7

STRATEGIES -- *How do we get there?*

Strategy implies conscious, calculated planning. Webster defines it as "the art of devising or employing plans or stratagems toward a goal." A number of things should be taken into consideration, then, in the development of strategies to achieve our goals and objectives.

GENERAL APPROACHES

Basic operating decisions, such as who will have the responsibility for the planning effort and whether or not there will be an overlap of planning and implementation, are treated in our "how to" section in PART IV as preliminary to the four elements of the planning process (assessment, goals, strategies, evaluation). However, as these decisions have a great deal to do with the kinds of strategies required for achieving the goals, we have chosen to discuss them briefly in this chapter.

Two general concepts concerning operational responsibility have been employed in environmental education planning, each with variations and each being valid in a given setting.

On the one hand is the *elite* approach, where a small group of people made all of the basic decisions about goals and objectives, formulated the plan, and produced the planning document and any other results. In these cases, the planners were usually experienced in the field of education and included some who had ecology or conservation backgrounds. This approach might be chosen when the time restriction imposed simply does not permit the more tedious process of involving a large number of people. And in cases where there already exists a solid political and/or economic foundation for the effort, the need for wide-ranging participation may be diminished.

At the other extreme is a fully *participative* approach, where the planners began by presenting a tentative set of planning process goals to representatives of the citizenry. After arriving at agreement on these, they utilized citizen participation to collect information on problems, needs, and concerns; then sought concurrence for fundamental decisions

regarding goals and objectives, the nature of the plan, the content of the document, and other outcomes. (In a state like Colorado where there is a tradition of decentralized implementation of nearly everything, but particularly education, the implementation of any environmental education program on a statewide basis depends on the interest and commitment and application of local resources.)

Most planning is probably done by adopting an approach somewhere in between these two. There doesn't seem to be any right or wrong way, except in relation to the specific circumstances surrounding any given situation; but the responses to the questionnaire and the work of those at the Estes Park Conference indicated a preference for the more participative model.

PLANNING ONLY? PLANNING AND IMPLEMENTATION?

The Master Planning coin has two sides -- planning and implementation. Planning is the process of putting together the content (the needs and recommendations for meeting the needs) and of presenting and disseminating this information. Implementation is the carrying out of the recommendations, the following of the blueprint, the taking of the actions that lead to the achievement of the goals generated as a result of the planning process.

A second consideration regarding basic strategies, then, is whether the planning process will be the only purpose of the effort or whether implementation of the plan will also be considered part of the responsibility of those doing the planning.

The most typical and easily understood procedure is for the implementation of the plan to follow, as a distinctly separate step, the completion of the planning process and the publication of a document. (Often the agency or organization responsible for formulating the plan must turn over all, or most, of the responsibility for implementation to another agency or organization.) An alternative is to begin implementation prior to the completion of the planning process, as a parallel activity. (In that case, very often one agency or organization takes primary responsibility for at least providing the leadership to both planning and implementation.)

As the two sides of a coin are inseparable, many believe that to be effective planning and implementation should not be treated as sequential and discrete tasks. For efforts such as statewide environmental education planning to truly succeed, they probably have to go through something like four major phases -- in a continuous flow with the phases

overlapping:

> PLANNING -- which is objective in terms of preparing an intelligent and pragmatic approach to the situation, and yet subjective in terms of recognizing that we're dealing with people, not designing machinery.
>
> CREATING A MOMENTUM and commitment toward implementation -- the community development mode (a political process).
>
> IMPLEMENTATION -- the use of the structures, projects and networks of harnessed effort that will achieve the goals of the plan.
>
> REFINEMENT -- improvement through continuous evaluation plus the watchdog function of seeing to it that what has been built doesn't collapse but continues in an ever-widening spiral.

The kinds of skills needed for successful planning are often different from those needed to successfully implement the plan. This seems especially true in programs whose purposes and goals are largely subjective and people-focused. Too many grass roots-oriented planners find it difficult to move ahead until there is consensus, and are often so enamored of the democratic process that they fail to exercise firm leadership. To them, taking leadership means being dictatorial and therefore objectionable. Further, many such planners are often excited and satisfied by the "electricity" or the "vibrations" generated when well-meaning people come together; they fail to see the need to create the dynamic necessary to move the action forward and to do the tough, uninspiring follow-up.

Just as the Plan should furnish the base for the dynamic or momentum, the dynamic should provide the foundation and many of the answers for implementation. To do this and do it well requires a repertoire of skills ranging from concern and insight for the human and social condition, to sometimes making the harsh choices between alternatives, to occasional deliberate insensitivity in order to get the imperative things done.

To pull off all four phases successfully, then, means either that each phase should be conducted by four successive groups, each carefully selected to have in abundance those skills required by that particular phase, *or* that a single group be capable of accepting the challenge of continually developing new internal skills to meet the problems engendered by the very success they sought.

An important challenge for state planners, therefore, is to thoroughly internalize the relationship between initiative,

authority, and responsibility. *Initiative* must be jealously retained and aggressively used as the lubricant between the key elements of a developmental effort. *Authority* is the right by which one does whatever he does, often deliberately ignored or confused by those professing humility. *Responsibility* is the obligation to perform and be accountable to those who granted (willingly or not) the authority to perform. The interplay between these concepts is intellectually simple, but difficult to carry out. The easiest analysis is:

- Planners must never lose the initiative on any dimension of environmental education in the state.
- They must clearly detail and firmly fix with someone responsibility for every aspect of environmental education and its development, or accept the consequences of being held responsible themselves.
- They must accept authority for doing whatever is needed to accomplish the particular task at hand. (Authority is usually not clearly granted but must be seized by those having the correlative responsibility.)
- They must carefully pick and choose among the many things that could and should be done to find those that best advance the total effort -- and insure that they are done, at an reasonable cost.

Regardless of the approach used, however, or the skills of those involved, the goal-referenced model discussed on page 37 calls for the selection of methods and strategies that offer the best chance of achieving the goals. By carefully linking the strategies and methods to the goals, and being careful to write objectives which offer measurement criteria or indicators of performance that will provide evaluative information along the way, the entire process will be strengthened.

CONSTRAINTS

An element often overlooked in planning, and implementing the plans, are the constraints upon the effort. These should be taken into account from the outset, and strategies chosen to overcome them. For our purposes, constraints will be viewed in two ways.

The first involves those factors which lie outside the control of the planner, circumstances and/or people that are givens -- state laws or agency policies which prevent certain key actions, for instance. These are things about which the planner can do very little but because they are a part of his

"environment" he must be aware of. In fact, this particular set of environmental constraints is something that determines in part how well the planning or implementation will go.

The second set of constraints are those over which the planner does have some control; he can at least manipulate them to his advantage. These are the elements inside the effort, such as resources typically expressed in terms of money, man-hours and equipment. There are other internal constraints, of course, which are more difficult to manipulate because they usually involve the knowledge, skills and abilities, attitudes, values and beliefs of the planners or the structure and organization of the planning effort.

A more detailed account of *how* to identify constraints, determine ways to overcome them, and develop a systematic strategy with which to achieve the goals and objectives is presented in PART FOUR.

CHAPTER 8

EVALUATION -- *How do we know if we're on course?*

Evaluation is generally conducted from one of two perspectives: assessment of the extent to which and manner in which intended program activities were actually carried out (a means-referenced base) or measurement of the effects of program activities on the target situation or population over the short and/or long term (a goal-referenced base). Of the two, evaluation referenced to the ultimate goals sought by the program is usually far more relevant to action-oriented projects. For purposes of illustration, the model discussed below is one used by the Center for Research and Education.

Regardless of the complexity or sophistication of a given program, most contain the same basic elements: a need, a goal, a means to achieve the goal, and a desire to compare results at the end of the program with conditions existing before the program began. Therefore, no matter what the specific purpose of the evaluation or the particular methodology used, we apply the various evaluation methods within a goal-referenced model. The procedure goes like this:

1. Each goal is broken down into measurable objectives and each objective is stated as an hypothesis, including the quantifiable criteria necessary for evidence of successful achievement.
2. Measuring instruments are developed to assist in gathering evidence that accurately reflects the extent to which the objective has been achieved.
3. Statistical techniques are determined that are most appropriate for testing the hypotheses.
4. Data is collected and subjected to statistical analysis, and findings are consolidated.
5. Findings are compared to the criterion levels established for successful achievement of the objectives, judgments are made concerning the extent of successful achievement, and results are reported.

We believe evaluation for action projects must help strengthen the programming process -- not simply provide a report card. As a result, assessment and measurement of activities determine the extent of intended or expected achievement,

and this data is systematically fed back to those responsible to provide guidance for decision making.

Evaluation data can indicate precisely what happened in the process, where it happened, and why. Rather than post-project determination of what went wrong if something fails, or abandoning an entire activity for unclear reasons, a goal-referenced system with continuous feedback indicates which decisions were correct, which were not, and what must be done to achieve the desired outcomes. This type of evaluation contrasts sharply with approaches where the evaluative data arrives too late for use by those responsible for planning and/or implementing a program.

How to apply an evaluation system to the state planning effort is discussed in PART FOUR.

PART FOUR

MAKING IT HAPPEN

or

How to get the job done

Whereas the emphasis in PART THREE was on theory and philosophy, and provided a general overview, the six chapters in this section are devoted to explaining step by step the procedure one might follow in undertaking an environmental education planning effort.

The content of this section is largely drawn from the replies to the questionnaires and the work done by the participants of the Estes Park Conference. Most of the specific examples indicated here are the result of their work.

CHAPTER 9

OPERATING DECISIONS

In the opening chapter of PART THREE, the description of the planning process, we included an outline of the way the goal-referenced system might work in the development of a comprehensive environmental education planning effort (page 37).

To recap the first phase, the Preliminary Work begins with the realization of the need to do something regarding environmental problems. Environmental education planning is one alternative solution. The issues surrounding the selection of this alternative must be resolved, out of which come the goals of the planning process. The planning group must then make decisions regarding who will do what, where, when, and how. These questions might include:

> *Who* will make and advise on policy? be the staff? support and supervise the work? pay the bills? provide information? review the work? be the audience?
>
> *What* are the goals and expected outcomes? strategies? indicators or evidence of success? organizational forms and structures?
>
> *Where* will the project draw its policy makers, advisors and staff? staff be housed? participants come from? audience be located? place its geographic emphasis? political emphasis?
>
> *When* will the project start? finish? arrive at major decision points or accomplish milestones?
>
> *How* will the project proceed to collect, analyze and process information? agreements and decisions be made? policies be set? roles and responsibilities be assigned? money and other expendable resources be spent and accounted for?

Once the answers to these questions have been provided, then the assignment of specific roles and responsibilities can take place and the strategies for carrying out the planning task can be developed.

During or immediately following the consideration of the controversial issues surrounding the launching of an environ-

mental education planning program, as discussed in Chapter 3, an important step is to articulate the operating assumptions or underlying philosophies of the project to be undertaken. These will determine how the work will be structured, the effort communicated, and the results shaped.

These assumptions may well determine at the outset the nature of the final result. When one sets out to collect information in the situation assessment phase of the planning process, one must decide *what* to collect, from whom, and to what use it will be put. The decisions made regarding these three points necessarily reflect a set of operating assumptions or, as some describe them, implicit planning goals. More and more there is a tendency to make them explicit and to incorporate explanations of these assumptions into the statements of goals for the planning task itself.

Because they have a bearing, too, on the kinds of strategies to be applied toward achieving the goals of the project, a philosophical discussion of these operating decisions was included in Chapter 7.

PARTICIPATIVE VS. ELITE APPROACH

One of the first things to be considered is where the responsibility will lie for the initiation and subsequent development of the master plan. A key philosophical element that should be examined, and some agreement reached, is whether the effort will be participative in its process or elite, employing primarily experts. The results of both the questionnaire and the Estes Park Conference clearly indicate that more states at least attempted to be participative, and involve a substantial cross section of people, than those who confined the task to a small group of specialists.

Since conservation and outdoor education had already been delegated for the most part to the educators, our study shows that a great many of the state master planning efforts were prompted or *initiated* by educators; second on the list were the various state agencies already working in programs related to environmental education, such as the state natural resource agency or the environmental quality agency. Others included the governor, the legislature, private organizations, environmentalists, and other interested citizens.

Primarily, the *development* of plans was placed under the auspices of a state agency or combination of agencies. A third of the respondents indicated their plans were drawn up by government representatives or outside consultant experts; two-thirds indicated the involvement of a cross section of citizens.

In those states where a participative approach was used, the most involved were representatives of organized groups, following by individual unaffiliated citizens, then government representatives, teachers and administrators.

The Conference participants agreed that different kinds of people and a variety of individuals, groups, and organizations were considered desirable in the planning process in order to gain better input of information and data, to obtain both short- and long-range support for the effort, and because of the belief that "environmental education is too important to be left to the educators."

To be sure, there were some reservations about the participative process and some disagreement about the extent and use of the broad-based representation. It was pointed out that if people get too involved in debating what the objectives are, it can delay establishing concrete programs. On the other hand, there was the complaint that many times such representatives are involved only on a token basis and have little to do with actually preparing the plan. Against these two points is the notion that the master plan should represent the thoughts of the entire planning group rather than be written by professional educators or planners alone.

Possible roles and responsibilities for various individuals, groups and organizations participating in the endeavor included:

- Providing ideas, data and personal contacts.
- Helping to mobilize other people.
- Participating in planning sessions and workshops.
- Providing publicity, hospitality, etc.
- Helping to conduct some of the activities.
- Raising money.
- Assisting in writing part of the document.
- Special groups can make significant contributions in their particular areas of expertise.
- Keeping people apprised of progress was seen as being particularly important, and the use of newsletters or other means for spreading information about the planning effort was encouraged.

In addressing the value of participative approaches, emphasis was placed much more heavily on the importance of the individual and what he or she could personally contribute than on the group or organization represented. As a guide for choosing volunteers who will be the most productive, the following pointers were suggested. The individual being solicited

for help should:

- Clearly have time to give to the effort, i.e., not be over-extended with other commitments.
- Provide evidence that he will become "involved."
- Not be part of a majority of volunteer or low paid students expected to do full-time work.
- Have some relatively high level of influence and commitment.
- Be politically non-partisan.
- Have some environmental or environmental education responsibility as part of his regular job.

The guidelines of the Office of Environmental Education for grant proposals made it clear that there must be a citizen organization closely involved with the master planning. Of those answering the questionnaire, 95% indicated that their project involved a council, board, trust, or similar governing or advisory body. Such councils originated in a variety of ways:

- Appointment by the governor.
- An ad hoc committee formed to prepare a preliminary master plan or proposal outlining a statewide EE program.
- One task force was the outgrowth of an existing advisory committee on conservation education, extended to become more broadly based.
- A legislative subcommittee extended its efforts to the preparation of a state plan.

Two-thirds indicated that the roles of these councils were clearly spelled out and that there were particular qualifications which the members had to possess. Some of those noted were:

- An interest and involvement in environmental affairs.
- Representative of a cross section of professions and differing backgrounds.
- Representative of various organizations, associations, agencies, interest groups, etc.

In most cases members of these advisory or governing bodies were not financially compensated, other than a few instances of travel and per diem allowances.

Some of the general purposes or duties of such councils, as listed by the various states, were:

- To identify problems, conditions, and needs of environmental importance on a statewide basis.
- To identify existing resources and inventory programs and activities dealing with environmental education.
- To help identify goals and objectives to be established in the state plan.
- To make assessments of the conditions in the state in relation to goals and objectives.
- To write or assist in writing the state plan.
- To coordinate statewide activities in environmental education.
- To be instrumental in implementing the plan.
- To act in an advisory role to an association, education department, state agency, etc.
- To recommend possible needs and areas for priority consideration.
- To make statewide policy decisions which would be carried out by regional and subunit organizations.
- To allocate funds to the regional or subunit organizations.
- To act as a reservoir for information on other states' accomplishments.
- To disseminate information to all persons interested in the environment and environmental education.
- To evaluate the effectiveness of the development of the statewide program.

In the light of the overwhelming amount of work represented by the above list, the importance of a working staff becomes clear. In responding to the questionnaire, 77% indicated that a working staff was used. Of those, most indicated that staff positions were salaried, although three-quarters of them pointed out that this resulted from staff having been assigned from other organizations or agencies. Staff functions included:

- To work with the council, board, trust, or similar governing body in inventory and needs assessment.
- To help design strategies and/or activities in the planning process and those recommended in the state plan.
- To coordinate activities of the planning process and keep the council, board, trust, etc., informed

of progress.

- To publish newsletters, keep informed on planning and implementation progress by other states, and attempt to involve more sectors in the importance of environmental education.
- To write or assist in writing the state master plan.
- To perform any subsequent tasks or roles assigned to it in the plan document.

PLANNING ONLY OR PLANNING AND IMPLEMENTATION?

Another concern at the outset is the extent to which there will be an overlap of the planning process and steps toward implementation. Two pertinent points became clear during the Colorado Master Plan process. They also emerged in the discussions at the Estes Park Conference and in our study of the master plan documents.

First, in employing a participative approach, people need to be doing something concrete. If the planner is unable to provide something tangible with which people can become involved, many of them tend to lose interest. This happens not only from a lack of action but as a result of the difficulty in convincing people, from a theoretical base alone, that environmental education is something they should get excited about. Further, the concept encompasses such a broad spectrum that it is often lost in vague generalities and unrealistic goals. Thus, being able to involve people in local projects and to help them gain some tangible success is an important element.

The second point for consideration is the possible importance of spending time, early on when there is more energy, enthusiasm and maybe more money, to launch several pilot projects of the type that will inevitably result from the planning process and therefore appear as part of the recommendations in the final plan, e.g., a clearinghouse. This point will be discussed in greater detail in Chapter 14 on implementation.

CHAPTER 10

SITUATION ASSESSMENT

PLANNING CLIMATE

After determining the operational structure of the project and identifying the key participants, the planner should involve these participants in an assessment of the planning climate as a major working premise. Questions regarding the planning climate in a particular state might be focused on the following:

- What is the level and intensity of awareness, interest and commitment apparent among various key elements in the community?
- What is the political and economic situation in the state? What do the politically and economically powerful feel about the effort -- neutral, willing to follow along because it is publicly popular? -- a threat to their growth and development? -- a part of their genuine environmental concern?
- What are the resources available in terms of unencumbered (no strings) money from public and private sources for both planning and implementation? -- the number and quality of part-time and permanent staff? -- the number and nature of in-kind contributions, the nature of the restrictions on the known resources?

This activity leads directly into the first major step of a systematic planning process. In Chapter 5 we discussed the importance of collecting and assessing data about environmental problems and people's concerns and needs.

TAKING THE INVENTORY

SOURCES:

To better understand the positions people take regarding problems, conditions and concerns, we need to think about the sources of the information collected and attempt to draw some generalizations. Information must be collected from a variety

of sources; they may vary from state to state, but should include those who have expertise in the area's environmental problems and its education, those who have political or economic influence, and those who are simply taxpayers. Several states, Michigan and Colorado for instance, systematically divided their total population into major segments:

Michigan	Colorado
Agriculture	Business/Industry
Business & Industry	Community Services/Urban
Citizen Organizations	Education
Elementary & Secondary Schools	Environment
Government	Government
Higher Education	Labor
Individual Citizens	Media
Labor	Minorities
Mass Communications	Professional
Professional & Trade Associations	Rural
Religious Organizations	Student/Youth
Youth Organizations	

One might also be concerned with the education level of the respondents, the nature of their training or skills, their income level, the ethnic groups they represent, the types of jobs they hold, their ages, and a number of other factors.

It may be possible to generalize by comparing regional areas; for example, Northern California with Southern California or San Francisco with Los Angeles.

METHODS:

A variety of methods and techniques is available for collecting the kinds of information required. In examining some of these methods, let's return to the three levels of problems expressed in the Environmental Education Act.

- At the first level, sufficient information about the quality of the nation's environment and the problems of ecological balance may have already been collected for purposes of state planning.

To find this data, one might begin checking with the state natural resource agency, the environmental protection or environmental quality control agency, the state university, especially the land grant college, and the local library -- even the Yellow Pages. In some states special commissions have been at work fulfilling the very task of defining the problems and the conditions today; and several task forces have been engaged in describing the future problems and conditions in terms specific enough to be useful in the planning effort. Of course, there are also the large number of books, magazine

articles, and other printed materials prepared on this subject.

The one area on which the planner probably will wish to focus is that of determining the level of concern about environmental problems. One way to accomplish this is the public hearing, although this has lost some of its favor in recent years. A second approach is the more informal method of engaging a panel and audience in an open-ended and free-wheeling discussion of problems and concerns. A third is the workshop format where people working in small groups generate answers to sets of prepared questions. Still another approach is that of using pencil and paper instruments: Present a set of problems or concerns and have the respondents list them in order of importance. Finally, there is the combination of any of these approaches.

● The second level problem is the understanding by the public of the nation's environmental problems. Here one is seeking answers to the question of the level of people's awareness, the kinds and amounts of knowledge and understanding, and the kinds and degrees of skills and abilities. One is also interested in gathering information regarding attitudes, values and beliefs.

Some of the methods described above may be valuable here as well. Probably the most practical approach for getting good information on a large scale is either through the use of simple paper and pencil instruments or through individual or small group interview techniques. In either case, one should be careful to generate information from a random sample of the population, stratified across significant groups, so that the data forms the best possible baseline.

Several instruments have been prepared to elicit the information required at this level. One of them is a battery of tests produced at Syracuse University.* If the planner wishes to construct his own instruments, consultation with a specialist in this area is suggested to insure that the kind of data generated will be accurate and useful.

For the areas of environmental problems and people's awareness, knowledge, etc., the *unobtrusive measures* approach is becoming increasingly popular. Here one sets out to observe and measure certain phenomena in the environment (such as the amount of certain pollutants in the air, obtained from

---

*David J. Kleinke and Eric F. Gardner, *Syracuse Environmental Awareness Tests -- Level III: Final Report on Construction and Norming*, Syracuse University, Syracuse, N. Y., 1972.

published reports) as a means of determining the condition of the environment, or to observe and measure certain behaviors of people (as shown by the number who purchase special high altitude needles for automobile carburetors, for instance) as a means of determining their attitudes and concerns. Appendix A contains references to sources of information on unobtrusive measures and other measurement and assessment techniques.

- The third level is the lack of resources for educating people about environmental problems. Here one is concerned about the variety of needs people have, in order to proceed more effectively with environmental education activities, and the resources available.

Collection of this data is a very important aspect of a comprehensive planning effort. An attempt should be made to inventory existing services and resources and to assess the level of interest of those who have responsibility for program implementation. The survey should include, if possible, assessment of the interests and capabilities people might have in the future to provide resources and services or to engage in program activities.

One approach for getting the kind of information required is to circulate printed forms among those who have the needs and those who provide resources/services or may provide them in the future. A second approach is to conduct a series of interviews, either individually or in groups. In an interview setting one can get more clarification under certain circumstances, whereas data collected through use of printed forms is more easily manipulated.

Appendix B includes some forms that have been used to gather information about resources, services and needs which may be useful either in their present format or as background for developing a form tailored to one's own particular situation.

Before getting too far into the process of collecting information, of course, one should determine a means for classifying or organizing the information. Appendix C contains some classification schemes, several containing examples of problems drawn from work done using the particular scheme illustrated.

CHAPTER 11

GOALS AND OBJECTIVES

Building the Plan is the third phase in the process overview outline (page 37). To quickly review:

To build the plan itself, one begins by formulating a comprehensive set of environmental education goals, drawn from the determination of needs in the assessment process just described. Additional pre-program assessment data must be collected to establish a baseline for the level of attainment of the objectives. A parallel activity is the identification of the constraints. Development of alternative strategies to overcome the constraints, and to carry out the recommended programs in such a way as to achieve the objectives, follows. Finally, given the strategies, one must determine the specific resources required for implementation, locate them, and secure resource commitments.

In Chapter 6 we discussed the fact that goals and objectives form the basis of a systematic approach to planning. They are the link between the expressed needs and the program activities recommended to meet the needs. The goals give over all direction to the project; the objectives are the observable and measurable conditions one is willing to accept as evidence that the goal is being met.

State planners must deal with two types of goals, the goals of the planning task itself and the goals of the environmental education programs recommended as a result of the planning effort.

GOALS OF THE PLANNING PROCESS

Our primary source for the goal statements pertaining to the planning effort is the task groups who addressed this issue at the Estes Park Conference. In order to organize or classify them, the participants concluded that there were two sets of process goals which must be addressed:

- Of primary importance are those goals that establish the direction for the work to be done in formulating the plan. They describe in general terms the intended results of the process or procedure to be employed. For example, one goal

might be:

> To produce a state environmental education plan that accurately represents the opinions of the people of the state concerning the state's environmental problems and educational needs.

An example of one objective might be:

> To identify the priority environmental education needs that accurately reflect the opinion of the state's population. Accuracy is to be ensured according to a stratified random sampling model in which citizens will be polled according to all relevant interest groups (business and industry, environmentalists, rural groups, etc.), in sufficient numbers, and representing each geographical location in the state.
>
> The evidence which will indicate whether this objective is achieved will come from the sampling model: Were all relevant interest groups represented? Were there sufficient numbers of people in each group? Was each geographical location represented?

- The goals of the "products" of the planning effort must be determined and articulated. These, of course, include the goals of the master plan document.

A set of goal statements produced at the Conference is presented in Appendix D. They are offered as check points only and to serve as examples from which to select or with which to build one's own list.

METHODS OF DETERMINING THE GOALS

To determine process goals, as well as the goals for the statewide program resulting from the planning effort, the following approaches have been used:

- Conducting public meetings on a statewide or regional basis to gather input from the general citizenry.
- Assigning topics or priority program areas to interest committees for consideration.
- Conducting workshops with representatives from various interests and backgrounds.
- Sponsoring statewide conferences to receive input from various sectors of the state on the process and the content.
- Conducting interviews or meetings with individuals

and small groups throughout the state.

- Receiving input from questionnaires, surveys or similar mass group methods.

PROGRAM GOALS RESULTING FROM PLANNING EFFORTS

One of the results of the planning process was the development of statewide environmental education program goals. Not all of the states actually called them goals or objectives -- many were listed as purposes, aims, or recommendations -- but each state produced goals which could be classified in at least one of the three levels of problems being addressed. For example:

- To lower the level and/or intensity of air and water pollution.
- To promote knowledge and understanding of ecological principles and a change in attitudes and values concerning the environment.
- To train personnel from formal school systems, environmental organizations, media and others in both the content and methodology of environmental education.

A listing of program goals is included in Appendix D. These were developed by combining and summarizing the goal statements in the Master Plan documents as well as from the work done at the Estes Park Conference.

A difficulty experienced in using almost any of the goals listed is the failure to reach agreement on the meaning of key terms and phrases (e.g., *quality environment, environmental ethic, life styles conducive to. . . .*).* This shouldn't cause too much trouble, however, if we keep in mind that people will ultimately make up their own minds and that the planner's responsibility, from a program point of view, is to present a balanced approach. That is, instruction should be multidisciplinary and provide information about both the present and future conditions of the environment -- from points of view ranging from conservation and preservation interests to those representing industries with the most voracious appetites for nonrenewable natural resources.

---

*For a helpful discussion of "quality of life," we suggest you refer to *The Quality of Life Concept* prepared by the Office of Public Affairs, Environmental Protection Agency, U. S. Government Printing Office, 1973.

In writing goals, therefore, one must consider not only the conditions and consequences to the natural environment but the conditions and consequences to the social, economic, and political elements of the man-made environment and to the status of man's relationship to other men and to himself.

Finally, there is one more differentiation which should help in organizing and classifying goals and objectives, and may help to provide the bridge between goals and objectives and developing the strategies for achieving them -- formal and nonformal education.

- *Formal* education includes any education which occurs as a part of the programs or activities of an educational institution, i.e., teacher preparation, curriculum development, etc.
- *Nonformal* education includes such things as newsletters, films, TV, radio, speeches, and any other type of education which occurs outside the formal education structure.

It is important that both be considered because of the tendency of most people to think of education as occurring only in the arena of the formal classroom. Environmental education must be provided for everyone.

CHAPTER 12

STRATEGIES FOR ACHIEVING THE GOALS

Some basic considerations in the determination of the most effective activities and methods to be employed in accomplishing the goals and objectives of the project have already been discussed in Chapters 7 and 9.

Another important element in building strategy is the early identification of the constraints on the project. By developing methods for overcoming the constraints, one automatically begins to strengthen the basic strategies required to assure success in achieving the goals of the planning or implementation effort.

IDENTIFYING THE CONSTRAINTS

A variety of methods are available for identifying constraints. Among them are brainstorming lists of possible constraints, keeping a diary or log of local planning issues, and gathering such information from the reports written about the progress of the planning effort. Once identified, the constraints should be rank-ordered according to which present the greatest obstacle to effective planning. Then the planner can begin to develop strategies to overcome them.

According to the respondents to the questionnaire, the most serious constraint to the planning process itself was a lack of time, a close second was a lack of money, while a lack of qualified and interested people was a distant third. In terms of their importance in a rank order, funds came in first followed closely by both time and human resources. (No effort was made to distinguish between internal and external constraints in the questionnaire, and no questions were asked about equipment.)

The planners assembled at Estes Park indicated that the following were the constraints they faced in doing state planning:

External or "environmental" constraints, in no particular order of priority.

- Deadlines for completion of part or all of task too close -- time too short.

- Money not directed to supporting the planning personnel.
- Inability to attract qualified people.
- Mistrust of the planning group or agency and/or lack of credibility.
- State laws and agency policies and regulations which prevented certain key actions.
- Conflicts, rivalries and jealousies between organization holding responsibility for planning and the others involved.
- Apathy and lack of commitment to the program.
- Lack of clear assignments of roles and responsibilities, especially for leadership; and inability or lack of interest in assuming assigned roles and responsibilities.
- Agency/organization/institution resistance to new programs and new costs; and priorities placed on efforts in areas outside environmental education.
- Lack of understanding and/or agreement on the part of agencies/organizations/institutions regarding the meaning or importance of environmental education; the approach to planning being employed or the structure of the task; and/or the need or value of statewide EE planning.
- Conflicts with and lack of understanding of the nature or importance of culture, lifestyle, political and economic powers, etc., in contemporary American/worldwide society.
- The nature of formal education with its emphasis on the cognitive and lack of emphasis on values, attitudes and beliefs.
- Institutional rigidity and bureaucratic inflexibility.
- Lack of expertise in and experience with ecology and environmental studies.

Internal constraints, in no order of priority.

- Inability to find effective balance between money, man-hours and equipment.
- Need to rely on volunteer staff work.
- Resistance of planners to new programs and new approaches.

- Unwillingness or inability to involve or take into account the needs and concerns of a broad cross section of the state's citizens.
- Inability to deal or work effectively with those having power and influence.
- Conflict among planners regarding roles and responsibilities; and inability or lack of interest in assuming assigned roles and responsibilities.
- Inability of planners to communicate with each other and to solve problems in their own working relationships.
- Lack of planning priorities or conflicts among planners over stated priorities.
- Disagreement with or lack of understanding of the need for or value of statewide planning, of the approach to planning being employed, and of the meaning and/or importance of environmental education.
- Conflicts with or lack of understanding of the nature or importance of culture, lifestyle, political and economic power, etc.
- Rigidity of policies regarding approach and outcomes of planning.
- Lack of knowledge and skills in planning and/or ecology and environmental studies.

METHODS TO OVERCOME THE CONSTRAINTS

Probably the most common method to determine how to overcome constraints involves brainstorming a force-field analysis with the application of some form of creative problem solving. Instructions concerning this method are presented in some detail in Appendix E.

During the Estes Park Conference, the participants generated the following random list of approaches which might be employed. It is not matched with the list of constraints, but suggests ways to attack some of the problems.

- Match the expected outcomes of the planning process to the time, man-power and other available resources, including lowering one's expectations.
- Gear the effort to a series of short-term outcomes which increase assurance that there will be some visible success.
- Create a planning strategy which:

- accounts for the money directed to pay salary and/or support of planning personnel,
- continuously investigates the availability of additional money and other forms of in-kind support,
- gains knowledge of laws, policies and regulations and set up tasks which do not conflict with these issues,
- spells out explicit roles and responsibilities, and provides for clarification, check-off and acceptance from those to whom assigned,
- provides opportunities for meaningful and challenging involvement with the process through simulations, games or other workshop-like activities, making it possible for people to work with real problems in both short- and long-term ways, and
- makes provisions for clarification and overt acceptance, modification or rejection of the meanings and/or purpose of environmental education, the planning process employed, and other similar issues over which there are disagreements and conflicts.

- Seek and encourage leadership from people who generally agree with what is being done, its purpose and its methods.
- Solicit support from citizens by involving them in the tasks of planning.
- Prepare for people's desire and concern for action by either being able to effectively postpone action without losing their support or by providing relevant and meaningful tasks for them to undertake prior to the full completion of the planning process.
- Be willing to compromise on approach and methods and to discuss or consider changes in goals or purpose -- flexibility and open-mindedness.
- Be prepared to explain clearly what the planning effort is and why it is being undertaken.
- Have well advised and well worked out strategies to deal with the political and economic realities -- a real world as opposed to "ivory tower" approach.
- Have at least one full-time staff member to make citizen contacts and to handle the logistics and production requirements.
- Provide a means to keep the public involved with the

effort and informed about progress and/or problems, as well as informed about all the good things going on in EE in your area.

- Continuously work to keep the planning effort and its accomplishments in front of the mass media.
- Secure visible political support by convincing candidates, under the duress of elections, to make public commitments to environmental education as well as work especially hard for support from legislators holding key committee or party positions.
- Prepare strategies which encourage participants at all levels to deal with attitudes, values and beliefs (including the re-examination of societal goals and values, developing ways other than dollars to account for decision making, dealing with the necessity and nature of change) and to challenge and debate the values which underlie GNP, progress, growth, etc.
- Open up participation to people and groups traditionally or typically excluded, and work to build communications and cooperative relationships between and among people who typically do not communicate or work with each other.
- Devise ways to improve the quantity and quality of resources by using existing resources more creatively and by finding a wider variety of resources through new working relationships, networking, and the involvement of other kindred souls.
- Find new and creative ways of dealing with the formal educational system.
- Make a continuous attempt to creatively reward the efforts of the people involved in the planning.
- Formalize efforts with the planning personnel to continuously upgrade their individual knowledge and skills in many facets of planning, environment, and education.

ENVIRONMENTAL EDUCATION PROGRAMS AND ACTIVITIES

In carrying out the charge of coordinating environmental education in the state, a variety of programs have been instituted or planned to create a more environmentally literate citizenry. These programs deal with both formal and nonformal education.

In *formal* education, programs and activities have been

designed to integrate the resources of the state such as the public school system, private and parochial schools, universities, and governmental agencies involved in programs related to the environment and environmental education.

Examples of programs and activities designed for formal education include:

- Developing curriculum materials to be used in the K-12 school system.
- Providing materials geared to various grade levels, such as books, films, etc.
- Developing non-disciplinary curriculum materials and teaching methods.
- Conducting research and development and assessment of implementation of programs.
- Conducting pilot projects capable of replicability.
- Providing pre-service programs for teachers on the environment and the value of environmental education.
- Providing programs designed to enhance in-service teaching.
- Providing programs at the post-high school level (vocational, university, adult education).

Nonformal education programs are also vital to the goal of total involvement of the general citizenry. One planner indicated that this is a "neglected but emerging area, where much of the action is." Such programs are designed to reach those individuals who are outside the formal education system but who should play an integral part in dealing with environmental matters. Groups to which such programs are addressed included voluntary organizations, governmental units, churches, business and industry, labor, and the general public.

Guidelines for designing programs and activities in nonformal education include:

- Allow for maximum interaction between these groups so that a concerted effort can be made in environmental education.
- Plan to involve the interaction of both formal and nonformal education so that there will be total community involvement in the environmental education process.
- Solicit information, materials, etc., from groups that deal with matters of environmental importance.

- Encourage these groups to become involved in environmental education.
- Provide for programs and activities designed for the general public to be disseminated and communicated through various forms of mass media.

Some of the states believed that *regional* environmental education should be established to meet specific needs. Some of the reasons given:

- Various areas in the state are relatively homogeneous, having populations with similar needs and aspirations.
- Due to the size of the state, regional divisions would facilitate implementation of the state plan.
- More local input could be made by establishing regional divisions.

In those states recommending or actually establishing such divisions, some regions were artificially created and some coincided with existing political, planning, or economic divisions. Functions of regional divisions were listed as:

- To meet the environmental education needs of the individual regions.
- To be responsible for carrying out the directive established for its role in the state plan.
- To initiate programs applicable to local needs as well as establish program guidelines replicable on a statewide basis.
- To work in concert with other regions and maintain a flow of information, materials, etc., with other regions as well as the state level operation.

Most state plans providing for regional divisions also recommended that a regional center be established for coordination of activities and for accountability to the state level organization.

The Tennessee Valley Authority planner assumed that developing strategies for achieving the objectives of a comprehensive plan began with a listing of, and agreement on, the types of programs to be included. As a guide, he came up with the following list of *program categories*:[1]

PLANNING, including such things as assisting with plan-

---

[1]Jonathan M. Wert, "A Process Model ..." (doctoral dissertation, University of Alabama, 1974), p. 118.

ning as it relates to master plans for environmental education, development of workplans, curriculum plans, and special programs on environmental concerns (technical assistance).

CURRICULUM, including educational classes for preschool, elementary, secondary, vocational, higher education, continuing and adult education.

COMMUNICATIONS, including a clearinghouse and the use of media to reach all target groups, to be implemented by a "central environmental education planning unit."

TRAINING related to environmental education, including the training of managers, technicians, individuals from trades and labor, school administrators, teachers, lawyers, etc.

MATERIALS, including the development of audio-visual aids such as films, film strips and slides; enrichment material dealing with population, energy, air, water, etc. (resource use problems); and textbooks and workbooks.

FACILITIES, including the development and operation of community action centers; environmental study areas; outdoor education or nature interpretative centers; parks, zoos, museums; and recreation and camping facilities.

COMMUNITY PROJECTS, including such things as environmental awareness projects, clean-up campaigns, recycling centers, political efforts, public meetings and hearings, and special programs on environmental problems.

Another useful list of program categories is that found in the 1972 USOE/EE guidelines[2] under Type C Proposals, Pilot Projects and Demonstration Models:

Personnel Training -
- In-service Educational Personnel
- In-service Non-educational Personnel
- Pre-service Educational Personnel
- In-service Non-educational Personnel
- Government Personnel

---

[2]U. S. Dept. of Health, Education and Welfare, Office of Education, *Environmental Education Act (Public Law 91-516) Handbook on Preparing Proposals*, October 1971.

Community Awareness -	School-Community Models Environmental Education Centers Citizen Participation Projects
Instruction and Curriculum -	Elementary and Secondary Programs Supplementary Materials Curriculum Development (including Media Projects)
Evaluation and Dissemination -	General Evaluation Dissemination (including Information Clearinghouse)

IMPLEMENTATION AS A PARALLEL ACTIVITY WITH PLANNING

The time involved between the inception of planning, through the planning process, writing and publishing the plan documents, and ultimate implementation of the plan has varied greatly; but a generalization indicates that the planning process usually involves two years. For this, and other reasons already discussed, many planners now feel that implementation of certain program recommendations can, and often should, take place while continuing to develop the remainder of the plan.

As mentioned earlier, it is quite possible to have enough information about environmental conditions, problems and concerns, as well as educational needs, very early in the planning process so that a specific program recommendation and set of objectives can be developed. One of the most obvious of these is an environmental education resource clearinghouse.

The concept of a clearinghouse varies in its form and substance from state to state, but 36% of those states responding to the questionnaire indicated that such a service was needed. Here is a sample and summary collection of purposes for an environmental education clearinghouse or center:

- To act as a focal point for collecting and disseminating information, supplies, materials, etc., on environmental education.
- To monitor all environmental education activities in the state.
- To provide information or referral to individuals interested in some aspect of environmental education.
- To develop techniques of data collection, cataloging

and storage of environmental education material.

- To evaluate the effectiveness of environmental education programs in accomplishing their goals.
- To investigate possible programs which will aid in the promotion of environmental education.
- To coordinate environmental education activities or programs in the region or on a state basis.
- To be accountable for disbursement of funds.
- To review or prepare grant proposals for environmental education programs or projects in the state.
- To distribute funds to other subcenters, regions or on a state basis.

Other program areas in this category, drawn from the effort in Colorado but clearly a part of many other plans, are (1) the training of environmental education personnel, (2) mass media environmental education programming, and (3) technical assistance. Appendix F contains references to sources of information in these areas.

ORGANIZATIONAL STRUCTURE

Closely tied to the system of matching strategies and methods to the goals, measuring outcomes and providing feedback, as described by the goal-referenced model, is the development of an organization. This is especially critical to the implementation phase.

Too often, from a planning point of view, this step is not accounted for. Either it is not a part of the final set of recommendations or it is simply mentioned with no provision for putting it into operation. Thus, the effort becomes leaderless and badly spread out. The result is a document and a turned-on set of people, but no organized way to implement or carry out the recommendations of the document.

Of course a variety of organizational structures can be employed. Because this book is written with a bias toward the use of a systems approach, we suggest that kind of organization structure. The entire work by Churchman, referenced on page 23, is a systems organizational model useful in environmental education planning and implementation. Another is that described by Ackoff and Rivett.[3] They propose a sys-

---

[3]Russell Ackoff and Patrick Rivett, *A Manager's Guide to Operations Research*, John Wiley & Sons, Inc., New York, 1963.

tem having the following four basic elements:

- CONTENT -- which in their terms means men, machines, material and money
- STRUCTURE -- a functional division of labor
- COMMUNICATION -- the flow of information within the system
- CONTROL -- the ability to evaluate performance and change in order to improve

This system can easily be applied to the master planning effort. The most important *content* of the working system includes the individuals, organizations, facilities and funds which are committed to immediate action, and efforts must be made continuously to locate more and higher quality resources. This includes cash as well as in-kind materials, facilities and services.

Several forms of *structure* have already been discussed in sections concerned with staff, advisory or governing bodies, and their respective roles and responsibilities. Structuring and assembling the content are linked together because usually we designate a resource in terms of its function. (For example, the need for librarians is a need for a content of people whose function is library activities, which therefore means we structure into the system the function of a library. When a paper company donates a load of paper, we have content in the form of materials which will be structured to perform a communications function.) Structure is especially important during the period of transition between planning and implementation, or as a bridge between the two in cases where they are concurrent activities.

Since education is basically a communication process, any education system must include *communications* as one of its most important subsystems, e.g., an environmental information clearinghouse, newsletter, person-to-person facilities, contact with the public media.

Control is multi-faceted and continuous. Of primary concern is the development and implementation of evaluation and feedback procedures. The functions themselves -- evaluation, feedback, and continuous modification -- are not difficult, but getting people to carry them out is something else.

A second major facet pertains to holding people accountable for fulfilling their roles and responsibilities. Through effective evaluation and feedback procedures, one can determine whether or not things are happening and even how well. However, to increase the quantity or improve the quality of efforts may require the use of an escalating set of accountability procedures. Written agreements should be made as to

who will do what, when and where it will be done, and at what cost; but it may require tactics ranging from salesmanship, through persuasion and arm twisting, to Jack Anderson-like public exposure to make the control system really work!

CHAPTER 13

THE MASTER PLAN DOCUMENT

The primary product of the planning effort is the Environmental Education Master Plan document. The content and format of those documents so far produced vary greatly from one state to the next; but based on our review of the published documents, and the views expressed at the Estes Park Conference, some general guidelines can be set forth.

Before launching into the production of the document, the planner should consider exactly whom the plan is to reach and, more importantly, to involve. A technical, overly comprehensive plan is risky as an effective way of generating support from the general public, which is constantly bombarded with data of one sort or another. A plan useful for the broadest range of people should be short, concise and to the point; lengthy documents will lose the reader long before he has grasped the total picture.

In light of the above it might be worthwhile to consider the production of two documents. In the first, priority could be given to presenting a plan capable of general interpretation to be used for soliciting support and interest. The second could be a more detailed account, containing supportive material, lists of resources, committees, etc., for those who need the details. (In Colorado, an interim document presented the problems, needs and goals; a second document presented the recommended programs to meet the needs.)

The following list represents some specific purposes and uses of a Master Plan document:

- To provide a rationale for the statewide approach, for environmental education, and for the Master Plan itself.
- To articulate the state's general philosophy for environmental education and to set forth the state's definition and/or description of it.
- To begin to give some shape and definition to the official state position on environmental education and thus to serve as a guide to future efforts in this area.
- To provide a set of goals and/or objectives toward

which future environmental education efforts are to be directed.

- To set forth the priorities to be used in allocating money or other resources. This may be done through the goals and objectives, the recommended areas and/or the target populations to be reached.
- To provide an organizational structure with which to implement the effort.
- To set forth recommended methods, strategies, programs, etc., with which to achieve the goals.
- To designate the individuals, organizations and agencies responsible for carrying out various aspects of the plan and for effectively disseminating information to them as well as to those who are in a position to hold them accountable.
- To designate the target populations and to indicate the content and methods to be employed in working with each.
- To set forth the anticipated constraints and methods to be employed in overcoming them.
- To provide a sales document or prospectus for approaching funding sources.
- To articulate and explain, in terms understandable to the broadest cross section of the public, the future of environmental education in the state.
- To present a time table for implementation, evaluation, plan modification, etc.
- To provide an indication as to the costs of the efforts and, where possible, the costs of important components as well.
- To articulate the need for and the means to carry out both short- and long-term evaluations of the plan, the efforts it generates, etc.

The content of the document will of course follow and be dependent upon the planner's determinations of its purposes and uses. Generally, it seems helpful to begin with a summary and rationale, followed by a discussion of the problems, conditions, concerns, needs, constraints, recommended goals and objectives, strategies (programs or activities) proposed to reach the various population groups, and the resources required.

There should be enough detail in the Plan so that the various groups indicated or interested can begin to carry out specific actions. It should be comprehensive enough to cover the known possibilities and elements involved, while still al-

lowing for creative and innovative additions or modifications by those taking action.

As examples, we have listed on the following page the table of contents exerpted from the Minnesota Plan and Colorado's two documents.

A final note about the document: To many, the title Master Plan for Environmental Education connotes a final document. One shouldn't stumble over semantics. A state plan should be flexible and susceptible to change, and a document entitled a "Master" Plan conveys a rigid, formalized plan even though this may not be its intent. A more appropriate title might be a Comprehensive Plan for Environmental Education, or some similar terminology. Perhaps the idea of a "first edition" with revised editions to follow may be helpful in this regard.

Table of Contents from MINNESOTA PLAN

Title Page
Table of Contents
Introduction
  Glossary of Terms
  Rationale for EE
  Historical Background
Organizational Recommendations
  The Need for the Organization
  A Proposal to the State Legislature
  Organizational Flow Charts
  Proposed Regions
Introduction to Educational Methods & Procedures
  Formal Education:
    Kindergarten thru 12th Grade
    Non-Disciplinary Curriculum
    In-Service Teacher Training
    Pre-Service Teacher Training
    Post-High School
  Non-Formal Education:
    Pre-Kindergarten
    Voluntary Organizations
    The Church
    Business-Industry-Labor
    Governmental Units
Introduction to Communications
  Formal Education, Non-Formal Education
Administrative Recommendations
  Preliminary Budget
Appendices

Table of Contents from COLORADO PLAN

Volume I - Title Page
Acknowledgements
Letter of transmittal
  to U. S. Commissioner of Education
Letter from Colorado Governor
Table of Contents
Summary
Introduction
Colorado Environmental Problems
Colorado Environmental Education Needs
Constraints to Solving Colorado Problems
  and Meeting Its Education Needs
EE Goals for Colorado
Interim Master Plan Recommendations
Evaluation
EE Program Possibilities and Suggestions
Appendices

Volume II - Title Page
Acknowledgements
Letter of Transmittal
Table of Contents
Introduction
Proposed Constitution & By-Laws for a
  Colorado EE Council
Plans for an EE Resource
  Information Clearinghouse
Plans for Teacher Preparation in EE
Plans for Media Involvement in EE

CHAPTER 14

IMPLEMENTATION OF THE PLAN

Referring back again to the process overview outline on page 37, the final phases are concerned with implementation of the programs recommended in the plan, evaluation and feedback. (Granted, this process outline represents an ideal situation, which may or may not be possible to the full extent described, but it is offered here as a guide based on experience.)

Prior to the conclusion of the planning effort, as many arrangements as possible must be made to assure that the plan and its recommendations will be carried out.

Boiling it down to its essential ingredients, implementation rests first on the willingness of key public and private organizations and governmental agencies to assume and to exercise responsibility for carrying out the various aspects of the plan. Second, the operating funds must be available to those assuming this responsibility. In many cases, however, much can be done without great amounts of cash. The planners must do all they can to obtain capital, but this has proven to be the most difficult part and not always the most important.

Therefore, since a great deal can be accomplished by traditional bureaucratic and entrepreneurial means, planners are urged to secure written commitments concerning the roles and responsibilities of individuals, organizations and agencies determined necessary for the accomplishment of the program recommendations. In fact, it is recommended that the plan be published only after these commitments have been secured. Further, it is recommended that the plan document set forth who is committed to do what and, if possible, who has refused to make commitments and why.

Implementation takes place only as the designated roles and responsibilities are carried out and resources for which commitments are gained are applied. Otherwise, the plan stands little chance of being more than another document collecting dust on a shelf. Quoting from Colorado's plan:

> The printing of these plans offers no guarantee to those who want environmental education that what they propose will be accomplished. The only guarantee that exists is the interest and commitment of those who have taken part in

formulating these plans to carry them through to successful implementation. This will involve the commitment of our own resources, as a test of our convictions, in the transition from participative planning to participative doing.

ROLES AND RESPONSIBILITIES FOR IMPLEMENTATION

In most states, the present task is to catalyze a dynamic and to begin implementation of the environmental education programs recommended.

Ideally, the state itself should assume this responsibility. Several of the states, in responding to the questionnaire, provided information about their own plans in this regard. Perhaps some or all of their ideas, presented below, will be useful in helping future planners secure State commitment to assume this responsibility:

- Gain a commitment from the Governor to appoint and support an Environmental Education Council; to reallocate certain education or natural resource money, discretionary funds, etc.; and/or to seek legislated appropriations.
- Gain a commitment from key State Legislators (with help from their constitutents) to introduce and push for passage of environmental education legislation and appropriations.
- Gain commitment from various key state and local government agencies to provide specific manpower, to reallocate some of their existing resources, and/or to prepare subsequent budget or manpower assignments to provide for environmental education.
- Gain commitments from institutions of higher education, public schools, etc., to make time, personnel, and/or money available to environmental education.

However, if the state cannot or will not assume leadership, what are the alternatives? The Conference participants who examined this entire issue concluded that a broad-based citizen effort might well be the central focus.

It was suggested that planners work to build an association of citizen groups, with large numbers of volunteers. If done properly, such a group could become monetarily independent by drawing its members and its resources from business and industry, government, environmental and other citizen groups. The achievement of such balance would also be helpful in opening doors for legislation because of its non-partisan nature. And, not intending to be facetious, planners were urged to be

realistic and not neglect to work with people who have influence, power, and money.

As part of the balance of broad-based support, however, the participants felt strongly that the Federal Government should continue its support through monetary grants as well as a variety of in-kind contributions, such as people, material, facilities and services.

Get started early! Forty percent of those states answering the questionnaire responded to the question, "If you had it all to do over again, what, if anything, would you do differently?" by stating they would have started getting their implementation plans under way earlier.

In the same vein, Conference participants were of the opinion that those who must finally accept responsibility for implementation should begin early to assume leadership roles. It was seen as important, of course, that leadership be assumed by people willing and able to assume and to exercise it. It was also important that there be someone, probably a staff of at least one professional with secretarial support, to oversee and follow up on implementation plans and efforts. The discussion on building an organization, beginning on page 76, is applicable here.

One word of caution. While the broad-based involvement helps to mitigate against the compromise potential of single source support, and may strengthen the efforts to get political recognition and support for environmental education, it offers the possibility that the results will be of the lowest common denominator. In trying to please everyone involved, one runs the risk of pleasing no one. The end result of the whole effort, therefore, could be a great deal of talk but no action -- much like the situation that existed prior to the start of the statewide effort.

GETTING THE EDUCATIONAL ACTIVITIES UNDER WAY

In talking about implementation, specifically we mean the carrying out of those activities (strategies) which will lead to the achievement of the statewide goals and objectives. These strategies and activities most often take the form of individual and specific projects which, *taken together*, comprise the program recommendations set forth in the master plan.

For example, in the program area recommendation of teacher training, an individual project might be the in-service training for fith and sixth grade teachers in the Sunrise School District. For mass media, one might be a series of 15-second spot announcements for use by commercial television stations to be used in

their public service messages. Getting all these projects under way is "implementation" of the state plan.

Each project, of course, should have its own set of terminal and enroute objectives, i.e., those to be achieved by the end of the project and those to be achieved during the course of the project. Strategies or methods to achieve the objectives (including media and materials to support the methods) should be formulated; roles and responsibilities should be determined and commitments secured; methods and instruments for evaluation procedures should be prepared. Figure 4 illustrates this process for an in-service teacher training project.

The major problem with most planning efforts is that the planners fail to fulfill their responsibilities with respect to the implementation phase -- by failing to provide for the full development of their program recommendations and by failing to secure and make public, for purposes of subsequent accountability, the necessary commitments from organizations and agencies. Goals and program recommendations are usually well expressed; the "how to" is often missing.

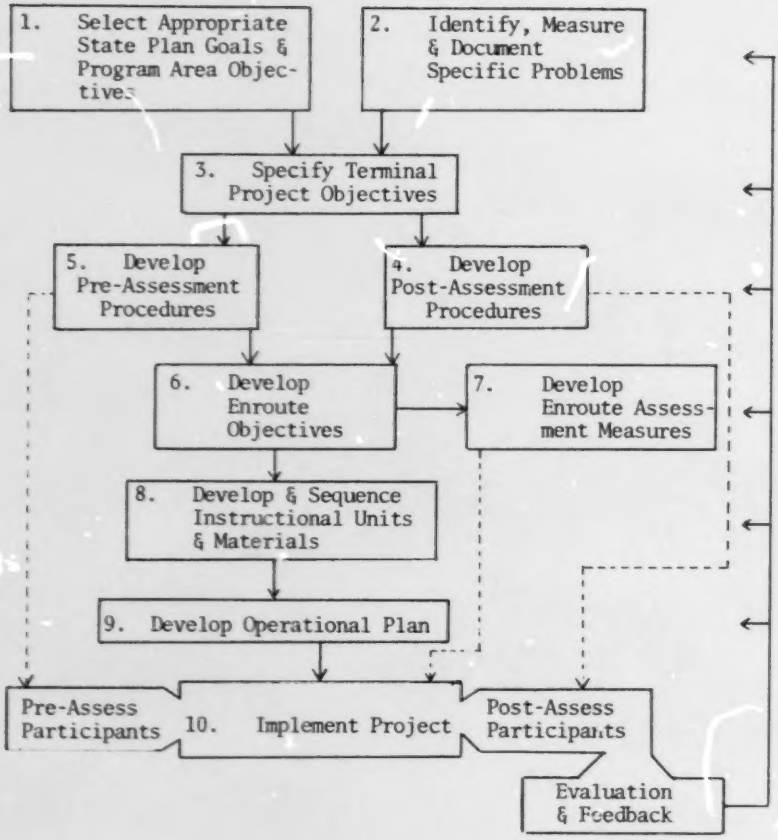
1. Select Appropriate State Plan Goals & Program Area Objectives
2. Identify, Measure & Document Specific Problems
3. Specify Terminal Project Objectives
5. Develop Pre-Assessment Procedures
4. Develop Post-Assessment Procedures
6. Develop Enroute Objectives
7. Develop Enroute Assessment Measures
8. Develop & Sequence Instructional Units & Materials
9. Develop Operational Plan
Pre-Assess Participants
10. Implement Project
Post-Assess Participants
Evaluation & Feedback

Figure 4.

In-Service Teacher Training Project Design Model

CHAPTER 15

EVALUATING THE EFFECTIVENESS OF THE STATE PLAN

The effectiveness of any state planning effort must rely on more than the kind words of its friends or the spears and arrows of its enemies. Provisions must be made and carried out to evaluate the effectiveness of the effort at several important points along the way. An evaluation scheme which could be applied to an environmental education planning effort has been described in Chapter 8.

Information collected through on-going evaluation activities can serve to affirm the effort or to aid in redirecting its resources. Ideally, this phase involves the testing and measuring of knowledge, attitudes, and behaviors of people (participants in the various projects) and/or environmental conditions in order to determine the results of the strategies and activities within the program area recommendations of the plan. The results are processed and analyzed, presented in some communicable form, and fed back to those conducting the projects.

This data helps the planners/implementors in deciding whether to continue the activities as they are, to make modifications, or perhaps even to cancel them. Such information is useful in the long-range efforts to determine the extent to which the goals and objectives of the plan are being met, and helps keep track of the changes which occur in the environmental problems, conditions or concerns and in the range of needs.

This is accomplished at the individual project level by comparing the results at the end of the project with the results of the measurements taken at the beginning. (See Steps 3 and 10 in Figure 4 on page 87.) At the regional or state level, or in terms of program area accomplishments, measurements (essentially the same kind as those used to get baseline data) are made at specific, scheduled intervals over the first three to five years of the implementation period. The data from these subsequent measurements are compared with the baseline data to show total change, and data from each measurement is compared with all the others to show incremental change or trends.

A systematic evaluation system can be applied to three

aspects of the master planning effort:

1. Determination of the extent to which the planning process as well as the programs implemented produce measurable results, as evidenced by changes in the behavior of people or changes in environmental conditions or problems.

2. Determination of the extent to which the various operational elements meet the performance criteria established -- such things as leadership, coordination, technical assistance, data collection, storage and retrieval, dissemination.

3. Determination and comparison of the costs, resources, and benefits of a program. By careful cost accounting the amounts of money spent in attempting to achieve the various objectives can be determined. Because the objectives are based on prioritized needs, decisions can be made about the relative benefits of achieving the objectives with various given costs.

   Caution: Throughout these measurements, special care must be taken to account for the resources variable. A great deal of the work during the implementation stage includes identifying and securing new educational resources, including commitments from additional individuals, organiztions and agencies to assume pertinent roles and responsibilities. This could affect, even cloud, the more simple input-output, cost-benefit picture.

Important elements in such an evaluation are the roles and responsibilities for measuring and monitoring. In the transition from the planning process to the implementation phase, the Plan might call for a council or advisory board to continually evaluate the effectiveness of the Plan (its recommended programs) and to provide feedback to those charged with implementation. Provision might also be made to revise the Plan at some specified time (e.g., five years) in order to reflect the changes in values, attitudes and needs of the people.

Although evaluation, measurement and feedback are important elements of a systematic program design, doing a good job of it can be difficult and time consuming. Some state planning efforts have included an evaluation phase, but few have actually carried it out in much detail -- either because they lacked the skills, resources or disposition, or because not enough time has yet elapsed. In any case, not much experience has been gained thus far in the use of evaluation procedures of the comprehensive nature described here. Unfortunately, not many planners have even undertaken the collection of the baseline data required.

As sure as environmental education appears to be needed, there are those who will ask "Why?" In this day of accountability, one should have answers stemming from measurement of results. The evaluation scheme recommended here may seem tedious and difficult, but it will certainly help provide the answers.

For those who wish to delve more deeply into the project, Appendix A contains a list of references for sources of information on measurement and assessment techniques -- especially measurement of values, attitudes, beliefs, etc.

MEASURING THE SUCCESS OF THE PLANNING EFFORT

The first step in the evaluation process is to provide criteria for evidence or indicators of successful achievement of each goal. In measuring the success or failure of the planning effort, there is a variety of evidence one can accept that the Master Plan and its formulation are or have been beneficial to the progress of environmental education generally and to the development and improvement of specific programs.

In selecting a set of indicators, care must be taken to differentiate them in terms of the three aspects of the master planning effort described above (changes in behavior and environmental conditions, performance of operational elements, and costs/benefits).

A second differentiation is between the criteria for indicators of a smooth, efficient, and effective planning process and criteria for the indicators of the success or failure of the efforts to implement the plan.

The participants at the Estes Park Conference addressed the issue of evidence one might accept that a planning effort was successful. The indicators they came up with reflect their bias toward those written in terms of the success or failure of implementation. Their list included examples of each of the three elements described above, and is organized accordingly. Certainly not all of the criteria listed below are applicable to every state, but from among this list one can pick an appropriate set. Each of the indicators should also be modified so that they are used in a locally determined quantifiable form.

Changes in People's Behavior and/or Environmental Conditions

- A measured change in some segment of the population's knowledge, behavior and/or attitudes.
- A measured change in a set of specific environmental conditions.

Performance of the Operational Elements

- The extent to which the process and/or its products (the plan and its recommended programs) have been adopted by the state or local governments and other groups or individuals.
- The nature of the involvement of individuals, organizations, and agencies in the planning process and/or in implementing various aspects of the plan, in terms of numbers, kinds, and extent of involvement.
- The effectiveness of the effort to implement the recommended programs -- which ones were successfully implemented and why, as well as which were not and why.
- The changes that occurred in existing programs, in terms of substance or amount of the change and the people involved.
- The implementation of new programs, in terms of how many and what types.
- Increase in public awareness, determined by the amount and nature of publicity by mass media, PR literature, specific references to the master plan in other in-state programs, as well as before and after measurement techniques.
- Acceptance by community leaders, in terms of their taking and exercising the responsibilities outlined for them in the plan or by the receipt of money from business or local foundations.
- The involvement of people not previously working with environmental education, and the emergence of new leaders.
- The existence of an organizational structure which survives the formulation of the plan, including some permanent staff and/or a representative citizen organization such as a state environmental education association or council.
- An increase in the number and quality of requests for technical assistance and a similar increase in the capability to meet and follow up on them.
- The establishment and implementation of environmental clearinghouse activities.
- The local publication of a newsletter or journal on environmental education and related matters.
- An increase in the level of cooperation and communication among environmental education groups.

- An increase in the number of politicians who talk about the master plan effort and/or who are willing to work with the planners.
- Provisions for and subsequent carrying out of revisions to the state plan.

Costs, Benefits and Resources

- Cost (input) versus benefit (output) and value of results of the various programs:
  - What was the total cost in dollars, man-hours, materials or other measurable input for a given program?
  - What was the total cost of the input for each measurable unit (numbers of people, new programs, etc.) of output?
  - What are the comparative costs among programs having similar output?
- Amount of increase in the level of funding for environmental education programs from federal, state, local, public and private sources versus the amount of input required to generate it.
- The ability to generate additional in-kind resources, such as staff or support personnel time, use of equipment and facilities, library access, etc., as well as resources like gifts of materials or money.

It should be clear, however, that it may take quite some time, years perhaps, to collect and assess the indicators listed above. Those associated with the master plan effort in Colorado are certain that many of these indicators of success are present at this time, but it is difficult to measure just how much the Master Plan did to provide this evidence as contrasted to how much came from the '76 Winter Olympic Games issue, for instance. Much more time will be required for an accurate assessment, more time certainly than the amount of time spent thus far on the planning effort.

PART FIVE

STATE OF THE ART

This section contains a discussion of the present state of the art of environmental education and some directions for the future.

CHAPTER 16

HOW FAR HAVE WE COME?

We have tried to show what has been going on in state planning throughout the country during the past several years. But an analysis of how far we have come, and just where we are at the present time, is a little more difficult. Assessment data on something as new and developmental as environmental education is fragile.

This work does not pretend to be a full-blown research report. However, we used a number of modes to gather data and, while they did not reach into every nook and cranny, we are satisfied that we have information sufficiently representative with which to draw some pretty accurate generalizations.

One thing is clear. The experience of the past four years has, on balance, raised more questions than it has solved. These questions are all factors to be considered in a discussion of the present state of the art and possible directions for the future.

As a basis for our discussion, let's take a look at some of the data. (This study is based on the planning done in 29 states; see Summary of State Planning beginning on page 8.)

Basic Motivation for Developing a Plan

What motivated these states to launch the effort in the first place? And where did the funding for planning come from?

The most powerful motivating force seems to have been the prospect of money -- money for funding environmental education programs. The primary source for this money was believed to be the Federal Government, specifically PL 91-516, with State Government a somewhat less promising source. The second most powerful force was a State Government mandate, from either the executive or legislative branch. According to our data, 12 states were motivated by such a mandate (although two of them did receive some federal funds). The other 17 were beckoned principally by the grail of federal money.

It is interesting to look at the specific sources of funding, for it gave these planning efforts their shape and direction. A display of this funding information appears in Table 1.

TABLE 1
Sources of Funding for Development of State Plans

A. Major Federal Funding

State	% Federal	Source	% State	% Other
Rhode Island	100	Title V, ESEA		
Alaska	90	Title III, ESEA	10 SEA	
California	90	Title V, ESEA	10 SEA	
Alabama	80	PL 91-516		20
New Hampshire	80	PL 91-516	10 SEA	10
New Jersey	80	Title III, ESEA	10 SEA	10
North Carolina	80	PL 91-516	10 SEA	10
Hawaii	75	PL 91-516	20 NR	5
Maine	75	Title V, ESEA	20 SEA	5
Colorado	70	PL 91-516	5 SEA	25
Minnesota	65	PL 91-516	30 Gov.	5
Texas	65	PL 91-516	10 Gov.	5
Massachusetts	50	PL 91-516	10 SEA	40

B. Minor Federal Funding

Connecticut	45	?	45 SEA	10
Michigan	40	PL 91-516	30 Gov.	30
New York	40	PL 91-516	60 Leg.	
Florida	25	Title III, ESEA	15 SEA	
Indiana	5	In-Kind	45 SEA	50
Wisconsin	5	PL 91-516	95 Gov	

C. No Federal Funding

State	% State	Source	% Other
Georgia	100	Leg.	
Illinois	100	SEA	
Nebraska	100	EPA	
Tennessee	100	SEA	
Washington	100	SEA	
Oregon	75	SEA	25
Maryland	50	Gov.	50
Pennsylvania	25	SEA	75
Iowa	25	SEA	75
Delaware	10	SEA	90

Purposes Toward Which Planning Was Directed

What are our goals, really, in launching a major effort to produce a state master plan for environmental education? Specifically, what are our goals with respect to the environment?

We have discussed here the need for planning to be compatible with a definition of environmental education which nearly everyone seems to agree should be problem focused, and in accordance with the three levels of the problem presented in PL 91-516. However, our study clearly shows that *to formalize a structure for implementing environmental education programs* ranked first, based on a weighted average,* as the reason for developing a master plan. *Improvement of the environment* was ranked fourth by weighted average and sixth in terms of the total number of respondents selecting the item. Thus it is difficult to see very clearly yet what role master planning will have in attacking and solving environmental problems.

Table 2 contains a display of ranked purposes.

Responsibility for Planning

Our study shows that in 14 of the 29 states, the development of a plan was the responsibility of the state education agency (SEA). It is interesting to note, however, that while the SEA was designated in seven of the ten states receiving only state and local support, it was the principal planning agent in only four of the 13 states which received their major funding from federal sources. None of the plans funded by PL 91-516 was the direct responsibility of an SEA.

Table 3 shows a listing of where the planning responsibility was placed in each state.

---

*A weighted average was calculated taking into consideration all the votes, for the first three rank positions, received by each item in order to get a better idea how that item ranked in overall importance compared with each of the others. The following method was used: Suppose six items were to be placed in rank order. All first place votes a certain item received were given the value of 3; second place, value of 2; third place, 1. Assume one item received 20 first place votes, 10 second place, and 3 third place. The value assigned each vote was multiplied by the number of votes: 20x3, 10x2, 3x1. The products were added to obtain a sum. The same procedure was followed for each of the remaining five items. The item with the highest sum is considered most important overall.

TABLE 2
Rank Order of Purposes of the Master Plan

Questionnaire Item	Weighted Average*	Mean Score*	% of Respondents
Formalize a structure for implementing EE programs	39	1.17	61
Bring about action in EE	35	1.81	57
Improve public awareness concerning the environment and EE	22	2.00	39
Improve the environment	18	1.43	25
Provide a basic framework for placing EE into perspective	18	2.20	36
Generate public interest in the environment and EE	13	2.56	32
Formulate potential legislation	7	2.83	21

*Calculations based on the top three choices only.

TABLE 3
Responsibility for Developing a Plan

State	Responsible Agency	State	Responsible Agency
Alabama	Indpendent	Michigan	Governor
Alaska	SEA	Minnesota	Governor
California	SEA	Nebraska	EPA
Colorado	Independent	New Hampshire	Independent
Connecticut	SEA	New Jersey	Independent
Delaware	SEA	New York	Leg.
Florida	SEA	North Carolina	Governor
Georgia	Independent	Pennsylvania	SEA
Hawaii	Independent	Oregon	SEA
Illinois	SEA	Rhode Island	SEA
Indiana	SEA	Tennessee	SEA
Iowa	SEA	Texas	Governor
Maine	SEA	Washington	SEA
Maryland	Hi. Education	Wisconsin	Governor
Massachusetts	Independent		

Public Involvement in Formulating the Plan

A great deal has been said earlier about elite and participative planning. Table 4 shows an ordering of states based on the amount of public participation they utilized. The upper 25% *substantially* involved an average of 3416 people (without Alabama's 15,000 the average is 1100); the lower 25%, an average of only 28; the middle 50%, an average of 223.

We were also able to determine something about the reasons for involving large numbers of people on the part of those who did so. The answer is in two parts. The first part of the answer is based on an analysis of information from states in the upper quartile only. The results, which speak for themselves, appear in Table 5. (As an aside, *to build a power*

TABLE 4
Rank Order based on Number of People Involved in Planning

	State	Substantial	Intensive	Any
	Alabama	15,000	1,500	30,000
	Texas	1,500	45	75,000
25%	Michigan	1,000	250	4,000
	Minnesota	1,000	75	1,000
	Illinois	1,000	63	1,000
	New York	1,000	15	1,000
	New Hampshire	725	25	750
	Maine	500	25	500
	Pennsylvania	400	40	1,000
	Colorado	300	30	750
	Tennessee	150	50	300
50%	Massachusetts	150	12	2,000
	Alaska	120	60	120
	Nebraska	100	50	200
	North Carolina	100	25	250
	Hawaii	90	10	150
	California	75	25	200
	Iowa	65	30	100
	Wisconsin	50	12	200
	Maryland	39	5	39
25%	Washington	34	4	50
	Rhode Island	25	12	30
	Indiana	25	12	300
	Oregon	23	18	78

(No information on this item from the other five states.)

base as the least powerful reason for involving large numbers of people is surprising in light of the fact that a *structure for implementing environmental education programs* was rated as the #1 purpose of a plan. Looking at theoretical reasons for large public involvement, many profess that it builds a political power base and thus helps to insure implementation. As a matter of fact, however, in this case the funding evidence we have to date seems to fly in the face of this view.)

The second part of the answer is that any state which received a planning grant from PL 91-516 was required to use a citizen involvement approach. All of the states in the upper quartile of public involvement, with the exception of Illinois, were working with a PL 91-516 grant.

TABLE 5
Rank Order of Reasons for Public Involvement

Item	Weighted Average*	Mean Score*	% of Respondents
Gather information	12	1.60	83
Obtain broad representation	11	1.25	67
Motivate public interest	7	2.25	67
Insure implementation	3	2.50	33
Build power base	2	3.00	33

*Calculations based on the top three choices only.

Implementation Roles and Responsibilities

We examined three aspects of roles and responsibilities: (1) Who is responsible for leadership and coordination? (2) Who is responsible for developing the programs and implementing them? (3) To whom are the efforts targeted? We looked not only at who was designated for each of the above in the Plan but how these responsibilities are actually being carried out.

The state Department of Education was named most often (57%) in the Plans as holding some responsibility for leadership and coordination. Second most often designated were the state Environmental Education Councils and the Natural Resource agencies. The Governor's Office and Higher Education were also somewhat highly rated.

In actually carrying out the responsibilities of leadership, the Department of Education is the leader (43%), followed by the Environmental Education Council and Department of Natural Resources. It should be noted, too, that while private organizations were designated for a leadership role by only 4% of the states, they are reported as exercising this role by 21%.

The Department of Education was also the most frequently designated group for program development and implementation (54%), followed by Higher Education, the school districts, and Natural Resource agencies. Of those groups actually carrying out this responsibility, the Department of Education and local school districts are the most active. They are followed by Higher Education, private organizations, Natural Resource agencies, business and industry, and Environmental Education Councils.

Students (71%) and individual citizens (61%) were the two major designated targets for Environmental Education programs. Personnel in local school districts, private organizations, higher education, and business and industry were also designated in a significant number of states. These same categories are also named as the actual targets.

Program Areas for Implementation

Overall, *training for education personnel* ranked first by a wide margin according to weighted averages. *Curriculum development for formal education* placed second. The full results of this analysis are displayed in Table 6.

It is worth noting that on the basis of the mean scores the #1 item is *statewide structure and organization* (a write-in selection). While it falls well down the list in terms of the number of people who listed this item, those selecting it apparently feel very strongly about it.

As another dimension, one-third indicated that their plans were directed entirely at formal education, while two-thirds indicated that both school and non-school populations would be involved.

In discussing the state of the art, one has to consider the fuzziness of the task. Planning itself, but especially its results, has always been difficult in the so-called soft areas such as education. It seems much easier for planning to occur and for people to understand and therefore implement plans which lay out a transportation system or land use and zoning plats. Asking people to implement education programs, where articulating concreteness and specificity is not really possible, is much more difficult.

TABLE 6
Rank Order of Areas Earmarked for Implementation

	Weighted Average*	Mean Score*	% of Respondents
Training for education personnel	65	1.55	71
Curriculum development for formal education	36	2.00	64
Material production and dissemination	14	2.60	36
Statewide structure and organization	13	1.40	18
Mass media production	12	2.00	21
Community projects (e.g., public awareness, clean-up, recycling, politics meetings, workshops, etc.)	12	2.29	25
Information clearinghouse	10	2.50	14
Training non-education personnel	9	1.75	1
Facilities development	5	2.33	11
Implementing existing curricula	4	2.00	7

*Calculations based on the top three choices only.

What role does education play? Do we want people just to know and understand more? Or do we want to change people's attitudes, values, and behaviors? If so, which attitudes and values are "correct"? Which should be changed? Which behavior is "bad" and which "good"? Are such things "taught" by indoctrination and behavior modification techniques? Or are people allowed to make some personal choices? Who decides?

These questions are difficult but they are at the heart of the kind of education we're talking about. This sets up a series of very difficult decisions for those engaged in planning and implementing environmental education programs. Just as with environmental problems, there is no national policy regarding people's attitudes, values and behaviors.

Which leads us to the question of just how much does a comprehensive plan have to cover? All of education? All the problems and all the issues of attitudes, values and behaviors? Or should we narrow our sights and be selective? We have not seen from the master plans any coalescing of views on these issues; in fact, few plans have dealt forthrightly with them. But most of the plans have been rather selective, attempting to narrow their targets (recipients of the environmental education programs) as well as the form and content of their programs.

ASSESSMENT OF ACHIEVEMENT

The final task in describing the state of the art is to present some information about the success, or lack of success, of the planning efforts.

Level of Public Interest

Measured changes in public awareness, knowledge, attitudes and behavior would be an excellent way to measure the extent of success or failure of a planning effort and the programs generated by it. However, it does not appear that any state has gathered the baseline data necessary to determine at any time whether or not changes occurred.

However, the April 1973 questionnaire asked for an estimate of the *level of interest* at the beginning of the planning effort, and the August 1974 questionnaire asked for the present level of interest.

Based on the 21 responses to this item on the 1974 questionnaire, the average level of interest is plotted at 3.40 on a five point scale -- or halfway between *some* and *considerable*. Based on information from the 14 states responding in both years, there has been an average increase of .93 points over the intervening time.

Extent To Which The Plan Is Being Implemented

Another way of looking at success is to examine the responses to the following question:

> To what extent are the provisions for implementation described in the Master Plan now being carried out?

1	2	3	4	5
Not At All	A Little	To Some Extent	To a Considerable Extent	Completely

Twenty-three states (79%) made some claim of implementation. The mean score was 3.13 or slightly more than *some extent*.

To get a better idea of how to interpret their scores, states were asked to estimate what proportion of the implementation they claimed was a *direct* result of the Plan and what proportion an *indirect* result. (For our purposes, direct results are those programs which occurred due to overt efforts to implement the recommendations outlined in the Plan. Indirect results are those which occurred during or following the development of the Plan, but which were not specifically spelled out in the Plan.) The proportion was 54% direct and 46% indirect as an average from the 20 responses received.

The dimensions of implementation may become clearer if we take a look at the activities under way in various states in the light of the evaluation criteria listed in Chapter 15. Obviously, we cannot document here all the environmental education activities taking place in all of the states. But as an example of the kinds of activity under way, we are including at the end of this chapter some of the "evidences of implementation" reported by states who seem to have the most going on in certain of the criteria categories.

Level of Implementation Funding

Some consider that the best test of master plan success would be based on the level of funding secured by states for implementating their plans. In answer to a question concerning 1974, only ten states (34% of the 29 states in our study) reported having secured any money specifically for implementing their plan:

TABLE 7
1974 Funding
for Implementation of Plans

State	Total $ Sought in 1974	% of Total Realized	Ratio % Cash/In-Kind	Funding Provision during Planning
Alabama	No answer	10	100/	No answer
Alaska	No answer	75	55/45	No answer
California	255,000	100	85/15	Yes
Florida	600,000	100	80/20	Yes
Hawaii	60,000	17	100/	Yes
Maryland	No answer	5	80/20	No answer
Minnesota	250,000	20	90/10	Yes
New Jersey	500,000	80	100/	Yes
Oregon	No answer	25	25/75	No
Wisconsin	50,000	100	50/50	Yes

Which leads us to the role of money as a contributing factor to the present state of the art. Money seems to have had a good and a bad effect. While it is true that there is more environmental education programming going on, especially in the area of new programs, in the states which have managed to obtain some funding, it is also true that we have placed an unholy reliance on dollars. In most states where federal funds have not been available following the development of the master plan, the substance of the planning efforts are now bordering on collapse. (Planners of course are reluctant to abandon ship, and hope that it is only a period of hiatus.)

On the other hand, not having a great deal of money may in the long run be of some benefit. There surely is a need for more self-reliance at the state and local levels. Maybe this is where the whole effort is headed; perhaps this is, in fact, part of the solution to environmental education. Either the environment and its effects on people is a problem and a concern, or it is not. If it is, people will support environmental education because it is in their own best interests to do so. Once people begin to understand that they cannot rely on hard cash from the usual sources to implement their plans, perhaps they will take it upon themselves to raise the money to put those plans into operation on their own.

These lessons may also be of some benefit to future planners in that they might approach the planning task somewhat differently if they are convinced in advance that very little, if any, money will be readily available for implementation. Connecticut, Delaware and New Hampshire, for instance, are cases in point. Their plans did not call for special funding in the way of additional appropriations. Rather, they looked to budget shifts and in-kind services to accomplish their purposes.

In any case, implementation of state plans for environmental education is left hanging in the balance. In the final analysis, the success of a state plan cannot be judged in terms of how impressive the plan document looks, how many pages it contains, how many copies were distributed, or how many people were involved in the formulation or approval of the plan. It is how much environmental education results directly from it that counts.

EXAMPLES OF IMPLEMENTATION EVIDENCE

NEW JERSEY

PROGRAMS UNDER WAY

In-Service Teacher Training: The N.J. Education Association and the N.J. Public Broadcasting Authority show on ETV five times a week the "Man and Environment" course (from Dade County Community College in Florida). Several thousand teachers have already taken the course; the series will run until December 1976.

All 70,000 public school teachers have been given a 1½ hour orientation in the use of the new computer curriculum system. Program includes $35,000 for training materials.

The N.J. Education Association and the Dept. of Education each sponsors two EE conferences per year.

Curriculum Development: A $700,000 computer-based curriculum resource unit program, 3/4 Federal and 1/4 State funded. (The teacher gives class description and other needs to the computer and it gives back the proper units of material.)

Media for the General Public: "Man and Environment," shown on the education television network, is available to everyone.

Mini-Grant Program: The N.J. Council for Environmental Education operates a mini-grant program which matches local non-profit education organization funds, up to $750, to conduct workshops, conferences, etc.

LEADERSHIP

Organizational Structure: The N.J. Council on Environmental Education was formed in 1967 to develop a state master plan for EE, the first of its kind in the country. Completed in 1970, the Council undertook to implement the plan in five years. As of June 30, 1975, it will go out of business.

All of the implementation started by the Council is currently being turned over to existing organizations. The Dept. of Education will assume the basic leadership role; they are adding new employees each year to accomplish that. Rutgers University will assume the functions of the resource center. The N.J. Education Association and the Dept. of Education are increasing their teacher training roles.

Political Influence: New Jersey is succeeding in large measure because it has established influence with both state and federal administration officials and state legislators.

Citizen Advisory Boards have been set up to work with local Boards of Education in 25% of the school districts.

GENERATING RESOURCES

N.J. received $350,000 in federal funds in 1970 specifically for the implementation of their master plan, with assurance of $400,000 per year in the succeeding four years. Beginning in 1975 when state support takes over, their projected first year budget of $250,000 is partially covered by $171,000 already appropriated by the State Legislature.

Further, the budgets of existing organizations are being expanded to enable them to assume their new roles.

FLORIDA

PROGRAMS UNDER WAY

Teacher Training: The Dept. of Education is sponsoring the development of a film for in-service training.

Curriculum Development: The Dept. of Education assembled 12 writing teams for K-12 curriculum development last summer.

Mini-Grant Program: The Dept. of Education had a $300,000 budget in 1974 ($500,000 in 1975) for making awards up to $5,000 to schools and school districts for EE projects.

Outdoor Education Centers: A pilot demonstration center is open and operating at Ft. Meyers; work is now progressing on a second one.

The Kiwanis and Lions Clubs are sponsoring an expansion of Outward Bound so that more people may take part. The Garden Club of Florida purchases materials for use in public schools.

LEADERSHIP

Organizational Structure: The Dept. of Education has elevated its EE staff from a consultant position to bureau status in accordance with its leadership role under the State EE Act. Each school district is developing its own structure for carrying out EE programs. The state has been administratively divided into five regions, each headed by a full-time EE Coordinator employed at each of five state universities.

Political Influence: Well developed relations with both the Federal Government and State Legislature helped to achieve much of what is described.

GENERATING RESOURCES

There has been a steady increase in funding from the Legislature --

1970 - $ 70,000
1971 - $ 70,000
1972 - $130,000
1973 - $300,000
1974 - $600,000
1975 - $800,000 requested

-- as well as in-kind services such as those described above from the universities, service clubs, etc.

CALIFORNIA

PROGRAMS UNDER WAY

Curriculum Development: *EKISTICS, A Guide for the Development of an Interdisciplinary EE Curriculum*, developed by the Conservation Education Service of the Dept. of Education, is now being used in schools throughout the state.

Mini-Grant Program: The Dept. of Education has $275,000 available this year for awarding grants to local nonprofit educational institutions for support of school improvements or community based programs.

Environmental Merit Awards Program: A statewide competition open to school age youth rewarding them for special efforts in environmental improvements.

LEADERSHIP

Organizational Structure: The Dept. of Education, working closely with the Dept. of Natural Resources, is organized to head the statewide effort. To assist in this role, a Citizen Advisory Council has been set up to help administer grant money. An inter-agency advisory council and an advisory group operating within the Dept. of Education have also been formed.

A state law was passed adding EE in all grades to the responsibilities of school districts.

Political Influence: The money from the state and the new legislation being passed speaks well of their efforts.

GENERATING RESOURCES

This is an especially well developed area in California. For example, the Dept. of Education's share of the individualized

license plate special fee program:

1971 - $100,000
1972 - $325,000
1973 - $ 0
1974 - $275,000
1975 - $275,000 requested

An effort is under way to secure a fixed 25% for EE.

A bill passed the Legislature last year (although the Governor vetoed it) for $2 million to provide $4.50/day for 6th grade students attending any of the state's 26 resident Outdoor EE Centers.

ALABAMA

The Alabama Environmental Quality Association continues to function as the operating branch of the state's Environmental Quality Council and as the citizens' environmental planning agency. As such, it assumes the leadership role in communications, coordination of EE activity in the state, and assistance with implementation of community EE programs. Of particular note:

- A comprehensive EE News Program.
- *EnvironNews*, a monthly newsletter.
- A State Film Library on environmental quality.
- An Alamama EE Documentary Film.
- A Resource Catalogue.
- A State Advisory Service to local communities on effective community planning.
- A Clearinghouse Service, linking areas of community need with the appropriate resources or agencies.

WISCONSIN

The Wisconsin Environmental Education Council, organized through the Governor's Office, is gaining strength under the leadership of a full-time Executive Director resulting in increased cooperation among and participation by state agencies. A new EE bill has been drafted and introduced to the State Legislature.

Programs under way:

- Media-based EE programs through the public television network.
- New course materials, films and in-service education opportunities being developed by state government agencies.

- In-service training opportunities for teachers being expanded in both content and availability.
- Curriculum and program guides for schools being expanded with new content and into more disciplines.
- Assistance to citizen environmental groups.

DELAWARE

New minimum standards for school district performance stipulate that beginning in 1975 EE must become part of all disciplines at all levels. The Dept. of Education will review the districts for compliance yearly through budget reviews and every four years with on-site reviews. Teacher certification requirements for 1975 include EE training.

The Dept. of Education has operated a basic orientation to EE (from 20 - 45 hours) for 140,000 teachers from 18 of the state's 23 school districts. The 'Man and His Planet" series is being instituted for students in secondary and higher education.

MINNESOTA

A 26-member State EE Council and 13 Regional Councils have been appointed and have completed their internal organizational procedures.

A state appropriation of $100,000 was made to the State Council which, among other things, enabled them to employ three professional staff members. One regional council has received a one-year grant for $25,000 from the private sector.

A variety of new programs are under way through the regional council structure. Including workshops for teachers, citizens and local government officials, mass media projects, etc., all are consistent with the recommendations of the state plan.

MARYLAND

The University of Maryland system has been designated responsibility for implementing most of the master plan.

The Dept. of Education is sponsoring workshops, publishing materials, and serving generally as an EE resource to schools. They have begun disseminating a delineation of EE concept areas.

Programs under way:

- A comprehensive Center for Environmental and Estuary Studies has been established.

- Both the Center and the Dept. of Education is developing supplemental curriculum materials.
- Two citizen education programs have been developed as models -- one in the Bay Area and the other in Appalachia.

OREGON

In-service teacher training workshops are being developed through a regional structure. A Teacher's Guide to Environmental Overnight Sites in Oregon was recently published. Committees are being formed to promote better public understanding of EE as an interdisciplinary concept in the school curriculum rather than being limited to the outdoor school concept.

IOWA

The Dept. of Public Instruction and the State EE Council have conducted EE workshops, and the Dept. of Public Instruction and institutions of higher education have developed a seven-semester-hour course in EE. Some 1800 persons have participated thus far. Seventy-five percent of the learning in both the workshops and the course is directed toward methods of EE instruction.

MICHIGAN

As an example of the work being done in the nonformal area, the United Auto Workers are operating an EE component in their Family Education Centers. This program follows the guidelines set forth for Labor in the state plan.

The State Legislature guaranteed to match (40% of budget requested) federal money received for implementation; however, no federal money has been made available. A bill requesting $200,000 for the Dept. of Education is now before the Legislature.

MASSACHUSETTS

A public Trust for Environmental Education has been formed to raise and disperse money for EE projects.

The Civil Service Commission has provided grants for a 30-hour EE course for government personnel. Some 300 have participated thus far.

HAWAII

So far, only a series of EE workshops (involving teachers, scout leaders, business and industry, government workers, and others of the general public) have been implemented. A $50,000 appropriation to fund a clearinghouse, the central part of the state plan, was approved by the State Legislature but to date the funds have not been released by the Governor's budget office.

RHODE ISLAND

Teacher training for EE now has a high priority in state funds available to local school districts; and the Dept. of Education's Alternate Learning Center, an in-service training component, also offers an EE program.

Note: New Hampshire, Connecticut, Alaska and Texas also reported implementation, but are not cited here due to lack of specificity.

CHAPTER 17

SOME DIRECTIONS FOR THE FUTURE

In our view, working to solve environmental problems must become the real focus and long-range purpose of environmental education. Further, environmental education must become an integral part of a concerted effort -- well coordinated and well financed -- to deal effectively with these problems. To bring about more sophisticated policy decisions and improved means for carrying them out, a channel of communication must be opened between those responsible for education and those responsible for technical and legal solutions.

In broad terms, we have a start at the federal level with passage of the Environmental Education Act, the National Environmental Policy Act, the Clean Air and Water Quality legislation, and support for the Environmental Protection Agency and the President's Council on Environmental Quality. There are parallel activities in this direction at the state and to some extent the local government level. All of this is a good beginning, and care must be taken not to let it falter. However, in terms of the entire environmental issue, if we are to prevent a reenactment of the energy crisis something must be done to pull these fragmented environmental efforts together.

A critical element, we believe, in pulling the environmental movement into harness is the planning and execution of programs that will affect the *behavior* of people and the various institutions of which they are a part. Moving awareness into changed behavior is a major part of any social programming effort.

As environmentally-oriented education grows and matures, it seems reasonable to expect that those responsible for education's content and process will begin to make decisions regarding behavior and begin promoting change in people's attitudes, values and beliefs. This should become as important and as acceptable as what we now do to teach the value and practice of American democracy. The question will be: Did we do it soon enough?

Those of us directly responsible for promoting and supporting the cause of environmental education must regard our efforts in the same way we regard our subject -- holistically, multi-disciplinarily, and ecologically. It seems clear that

while the total number of individual environmental education programs is on the increase, too little implementation is going on as a direct, measurable result of *master* planning. We recognize that small, individually operated projects can be relatively successful; but given the enormity of the problem, a steady increase in the number of unconnected, inadequately funded efforts, often based more on good intentions than on substance, will not meet the challenge confronting us.

One way to meet this challenge is to take full advantage of the state planning efforts already at hand.

States in which planning has already occurred can use their experience as the foundation for a more concerted effort. That experience can be extremely valuable to those states still involved in or anticipating a planning effort.

The foundation built by master planning thus far is comprised of several aspects. The most critical is knowledge about programs and resources -- an inventory of past and present programs, in both formal and nonformal education, and a catalogue of resources including the names and expertise of people, types of materials, and available facilities. The practical skills gained by those involved in the planning process are also valuable tools. These skills include organization, coordination, plan formulation and experience with citizen participation in a multidisciplinary effort. The master plan documents themselves are of intrinsic value as they include goals and objectives, strategies for achieving them and specific program and audience recommendations.

Complete realization of this potential, however, requires the development and inclusion of two key elements now missing for the most part: leadership and political involvement.

Someone must be willing to take the responsibility for leadership in the advancement of environmental education -- especially in the area of coordination, functioning as a "switchboard" to bring together programs and resources. Only a few states have undertaken to develop the necessary organizational structure. In many states the Environmental Education Specialist for the Department of Education is in a position to fulfill this role, but is often limited to traditional functions in the formal education sphere. The means for fulfilling the coordinating role must be altered, and the range of concern must be expanded to include not only those in the school system but also those people outside the formal school setting. The coordinating function must also involve continuing assessment of education programs, evaluation of resources, and gathering new resource information.

Few individuals engaged in state planning for environmental education have experience with political matters, and too

often they are reluctant to become politically involved. It seems clear that, generally speaking, planners have failed to sell or in any substantial way to influence state legislators and government budget people. This is due in part to the planners' inability to communicate with the power brokers or to persuade others to do so. In those states where planning began with political clout (Alabama, California, Florida, New Jersey, Minnesota and Wisconsin, for instance), the Plans seem to be still viable.

State planners, particularly those in a position of leadership, must gain more experience with the political process. This means selling, or lobbying, administrative and legislative bodies at the local, state and national levels. The goals are rearranging priorities, new uses of existing resources and, perhaps most important, gaining new or additional resources for environmental education programs. At the national level, perhaps the pressure applied should be focused on more efficient technical assistance and better coordination of information and other non-monetary resources.

Of considerable value would be the study of the various planning processes in light of their ability to deal effectively with political considerations. A major question before planners today is how can one effectively employ a planning procedure which will appeal at the outset to those in power positions. The extent to which reallocation of resources, the maximum use of existing resources, and the development of new resources are realized depends heavily upon planners gaining political experience and being willing to work toward political support.

The final challenge is the development of additional coordinated plans. For environmental education to be fully effective, every state should get into the act. Those who have not yet launched such an effort, or who have not completed the process, would do well to seek information and formal assistance from experienced planners. Why reinvent the wheel? Those who have been through the mill have at least educated guesses about which processes work, and which do not, and can usually articulate the reasons why.

We believe each state must play the key role in solving its particular environmental problems. To help pull it all together, however, it seems to us that the Federal Government must continue to take the leadership in providing technical assistance and monetary support for the efforts of the states to implement a comprehensive, state plan based, environmental education program -- in particular, the funding of discrete parts of state plans in several states where unique implementation mechanisms are already set up and ready to go. Further, federal agencies at the regional level must move into closer harmony with the states' efforts. As long as each federal

agency operates within its own policy, set in Washington, isolated from the policies of other agencies and with no apparent concern for local conditions, the full weight of their combined resources will never be felt. In fact, many of their actions may even be disruptive or damaging to the states' efforts. Finally, the Federal Government must be instrumental in enlisting the aid of the private sector -- both by example and by persuasion -- to support comprehensive efforts at the local level.

In the final analysis, the success of any master plan for environmental education will be measured by the amount of environmental improvement resulting from its influence. To approach this goal, states must begin using the experience of the past years to define priorities. If education is a viable approach to solving environmental problems, a coordinated effort based upon some form of regional or statewide planning is essential.

It is clear that one of the fundamental reasons for the existence of environmental problems is the fact that traditionally they have been attacked only on a piecemeal basis. To attack the solution in the same manner would not only allow existing conditions to continue but perhaps even further complicate the problems.

Appendix A

UNOBTRUSIVE MEASUREMENT

Unobtrusive measures are intended to allow for collection of data without impinging or intruding upon the people associated with the situation. This approach precludes the necessity to assemble a sample population and eliminates any bias that might result from the sample taken or the survey instrument (usually a questionnaire) used. It also minimizes effects in members of the associated population because they are not directly affected and may, in fact, be unaware that any study is being conducted.

This measurement method is therefore a more direct observation of situations and conditions than the attitude/opinion approach. It attempts to measure conditions directly, rather than measuring how people think conditions are. Examples for environmental education might be the following:

Unobtrusive Measure	Attitude Measure
• Number of people who actually purchase a pollution control device for their car.	• Number of people who believe there should be pollution control devices on their cars.
• Number of pieces of legislation actually enacted regulating land use.	• Number of people who express a belief in land use regulation.

Not a great deal has been done to date with unobtrusive measures, but this method is becoming more widely used as it becomes better known and as program people look for new ways to measure outcomes of their efforts. The best and most comprehensive reference in this new field is:

Webb, Eugene J., Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest, *Unobtrusive Measures: Nonreactive Research in the Social Sciences*. Chicago: Rand McNally & Co., 1966. Eighth printing, 1972.

***

REFERENCES: EVALUATION AND MEASUREMENT

Armstrong, Robert J., Terry D. Cornell, Robert E. Kraner, and E. Wayne Roberson, *The Development and Evaluation of Behavioral Objectives*. Worthington, Ohio: Charles A. Jones Publishing Co., 1970.

Backstrom, Charles H. and Gerald D. Hursh, *Survey Research*. Evanston, Illinois: Northwestern University Press, 1963.

Bloom, Benjamin S., "Toward a theory of testing which includes measurement-evaluation-assessment." Occasional Report No. 9, Center for the Study of Evaluation of Instructional Programs, University of California at Los Angeles, October 1968.

Bowers, C. A., "Accountability from a Humanist Point of View," *Educational Forum*, 35, May 1971.

Commission on Educational Planning, *Educational Goals and Objectives: A Model Program for Community Involvement*. Bloomington, Indiana: Phi Delta Kappa, Commission on Educational Planning, 1972.

Glass, Gene V., "Comments on Professor Bloom's paper titled 'Toward a theory of testing which includes measurement-evaluation-assessment.'" CSE Report No. 11, Center for the Study of Evaluation of Instructional Programs, University of California at Los Angeles, September 1969.

Glasser, William, *Schools Without Failure*. New York: Harper & Row, 1969.

Helmstadter, G. C., *Principles of Psychological Measurement*. New York: Appleton-Century-Crofts, 1964.

Kelly, George A., *The Psychology of Personal Constructs*. New York: W. W. Norton & Company, 1955.

Lessinger, Leon M., *Every Kid a Winner: Accountability in Education*. New York: Simon and Schuster, 1970.

Scriven, Michael, "Evaluation as a main aim of science: Comments on Professor Bloom's paper titled 'Toward a theory of testing which includes measurement-evaluation-assessment.'" CSE Report No. 10, Center for the Study of Evaluation of Instructional Programs, University of California at Los Angeles, September 1969.

Stake, Robert E., "Language, rationality, and assessment in improving educational assessment." In Walcott Beatty (Ed.), *An Inventory of Measures of Affective Behavior*, Association for Supervision and Curriculum Development, 1969.

Thurstone, L. L. Comment. *American Journal of Sociology*, 1946, 52, pp. 39-50, as quoted in Allen L. Edwards, *Techniques of Attitude Scale Construction*. New York: Appleton-Century-Crofts, Inc., 1957.

Wright, Albert R., "Affective goals of education," Monograph, Interstate Educational Resource Service Center, Salt Lake City, November 1971.

Appendix B

FORMS AND FORMAT FOR GATHERING INFORMATION ABOUT NEEDS, RESOURCES AND SERVICES

To illustrate various forms and format for collecting information about needs, resources, and services, three sources were chosen: The Texas and Colorado master plan projects and Jonathan Wert's process model developed for the Tennessee Valley Authority. These groups were especially concerned about this element of planning as they had responsibility for on-going clearinghouse functions as well as for the formulation of a master plan. The three groups used different approaches to dealing with needs, both in terms of substance and in terms of form and format. Presenting them here serves two purposes: To provide a sample from which the reader can select and to illustrate the range and variety of needs with which planners have had to deal.

NEEDS ALONE

The Environmental Education Needs section of the Colorado Interim Master Plan[1] is an important part of that document because it sets forth what Colorado citizens think must be done if environmental education is to make a difference. The following are summary statements of the needs identified:

- Understanding and acceptance of environmental education as a dynamic process which involves individuals in decision making about their own education and which leads them to take personal actions to solve environmental problems.
- Participative planning as the first step in carrying out EE programs and activities.
- Convincing those groups and individuals who have influence with particular constituencies of the need for EE.
- Financial support for implementing EE programs and activities.
- Improved communication, cooperation, and coordination among the various private and public entities within the state working in EE.
- Availability of and easy access to accurate environmental

[1] Master Planning Advisory Council, *Colorado Interim Master Plan for Environmental Education*, Center for Research and Education, Denver, Colorado, April 1972, pp. 15-24.

information that presents all sides of environmental issues.

- Wider, more effective utilization of the mass media (television, radio, newspapers, etc.) in EE efforts.
- Training in both content and methodology for those engaged in planning, implementing, and evaluating EE efforts in both the formal and non-formal educational spheres.
- Mechanisms designed to enable the assignment and assumption of specific organizational roles and responsibilities for promoting, assisting, and carrying out EE programs and activities within the state.
- Evaluation of all EE efforts undertaken in Colorado in order to make them accountable to their sponsors, participants, and the general public.
- A comphrehensive statement of overall EE goals for the state.

The following set of need statements is taken from Mr. Wert's sample questionnaires:[2]

What are needs which must be met in order to make an environmental education program operational? (Please rank by number in order of priority the ten needs which you feel are most important.)

- a central office or planning unit
- leadership
- coordination of efforts
- improved communications between environmental education efforts
- plans of action showing what needs to be done, how to do it, and the resources available
- technical assistance
- training for government and nongovernment personnel
- programs utilizing the mass media
- accessible information about environmental problems and conditions both now and projected for the future

---

[2]Jonathan M. Wert, *A Process Model Showing How a Federal Government Agency, such as The Tennessee Valley Authority, Can Utilize Its Resources to Cooperate with Other Agencies in the Development of Environmental Education Programs for the Tennessee Valley Region* (doctoral dissertation, University of Alabama, 1974), pp. 108-109.

- accessible information about environmental education programs, activities, methods, materials, etc.
- accessible information describing the baseline condition of the environment in the Tennessee Valley region
- accessible information which periodically updates the information about the conditions of the environment in the Tennessee Valley
- curriculum, audio-visual, and other enrichment material
- programs for community members to work toward achieving the environmental education goals, using approaches consistent with the TVA definition of environmental education
- academic and interm programs
- research and development which provide a balanced set of judgments and projections of future environmental conditions based on various sets of interrelated environmental problems
- fund raising efforts for environmental education
- facilities and expertise which enable individuals and groups to conduct research and development to find solutions to environmental problems consistent with the view of the future desirable environmental conditions
- identification or production of evaluation instruments which are used to determine program effectiveness
- utilization of evaluation results to determine program effectiveness and to make any appropriate modification and adjustments to the program.

NEEDS AND RESOURCES TOGETHER

The Texas planners took a different approach. Their forms and format included both needs and resources. They used one set of forms for collecting information from public schools and another for collecting information from those operating adult (non-formal) education programs.

Although the resources aspect of these forms is not a great deal different, the list of needs with which they worked were quite different from either Colorado or TVA. To maintain the integrity of these forms, they are included in toto at the end of this appendix. (See Page).

RESOURCES AND SERVICES IN TERMS OF PRESENT ACTIVITIES

An important aspect of any planning endeavor is the inventory of existing services and resources and assessment of the interests

of those likely to be responsible in the future for implementing various program elements. It is particularly important that this phase of the planning not be done by "ivory tower experts." Those actually rendering services, and those likely to be responsible for doing so, should be the people questioned.

Jon Wert developed the following listing of services for use in getting information from TVA offices and divisions:[3]

> What types of environmental education or related services are you now providing, and what types are you interested in providing in view of your existing or projected resources? (Place a mark in the left column next to the item which best describes what you are now doing. In the second column, mark the item which indicates what you would be interested in doing, given your present or projected resources and capabilities.)

Technical Assistance	Presently Doing	Interested In Doing
Participation in community action projects, recycling centers, etc.	____	____
Preparation of master plan or workplans	____	____
Preparation of grant proposals	____	____
Preparation of plans for educational facilities, i.e., school sites, environmental study areas	____	____
Preparation of legislation, rules, and regulations	____	____
Preparation and selection of learning materials, i.e., books, films, etc.	____	____
Planning, organizing, and participating in workshops, conferences, seminars, etc.	____	____
Designing programs for pre-service and in-service education at the higher education level	____	____
Designing specific environmental education learning activities, research projects, etc.	____	____
Development of communications and cooperative working relationships	____	____

[3] Ibid, pp. 111-114.

	Presently Doing	Interested In Doing
with educational institutions, agencies, organizations, and groups concerned with environmental education	____	____
Development of curriculum, audio-visual aids, exhibits, etc.	____	____
Review and evaluation of material and programs	____	____
Identification and recommended use of appropriate resource people	____	____
Participation on advisory committees, councils, etc.	____	____
Others	____	____
Environmental Data and Education Material		
Provision of environmental data, information, and educational material about your own in-house programs or projects	____	____
Provision of environmental data, information, and educational material about programs or projects external to your agency or organization	____	____
Provision of instructional material or learning packets and audio-visual aids on energy, minerals, land use, etc.	____	____
Others	____	____
Financial Assistance		
Funding of educational demonstrations and unique projects	____	____
Funding of research projects	____	____
Others	____	____
Specific In-House Programs or Activities		
Production of specific material which explains in-house programs	____	____
Provision of lands for environmental studies	____	____

	Presently Doing	Interested In Doing
Provision for programs, tours of power plants, dam sites, etc.	____	____
Provision of clearinghouse services	____	____
Provision for intern opportunities in environmental fields	____	____
Planning and conducting workshops for users of facilities	____	____
Planning and conducting training programs and/or workshops for employees	____	____
Planning and conducting conferences aimed at specific target groups, i.e., air quality, energy, etc.	____	____
Operation of day use program	____	____
Operation of resident program	____	____
Operation of mobile environmental education laboratory	____	____
Operation of environmental research program	____	____
Others	____	____

THE RESOURCE INVENTORY AS A BASIS FOR PROGRAM IMPLEMENTATION

This resource inventory differs from the previous one in that it is much more specific in content and purpose. This one asks a set of very detailed questions about resources needed specifically useful for the implementation of the program elements and the meeting of program goals. A resource inventory form, specifically geared to a program or program element, is sent to as many people as possible who may have or be aware of applicable resources.

Again we turn to Mr. Wert's process model[4] for an example.

Which one of the following resources does your organization have which could contribute to the program or program elements listed below?

[The title of the program, program element or group of elements for which one is seeking resource information.]

---

[4]Ibid, pp. 122-123.

1. Do you have any personnel who can perform environmental education program services? If so, who are the personnel? What are the services and for whom are they provided? When were they first provided? Where are they provided? Why are they provided? How can they be obtained? At what cost?

2. Do you have financial resources for funding environmental education demonstrations, unique programs, or projects? If so, what are the funds to be used for? When were the funds first provided? Where are projects funded? Why are funds provided? Who has responsibility for these resources?

3. Do you have any environmental education audio-visual aids, equipment, or other material? If so, what are they? When were they prepared? Where are they? Why were they prepared? Who has responsibility for this equipment and material?

4. Do you have any sites or facilities which can be used for conducting environmental education meetings, environmental investigations/studies, or research? If so, what are they? When were they developed? Where are they? Why were they developed? Who has the responsibility for these sites or facilities? At what cost?

RESOURCE INVENTORY AND CATALOGUING SCHEME FOR USE IN BUILDING A STATE OR LOCAL RESOURCE ACCESS/REFERRAL SYSTEM

The collection of resource information is important to a clearinghouse. During the period devoted to planning, and in some cases extending beyond that, planning groups have assumed responsibility for the collection, storage, retrieval and dissemination of information about resources. This was true in Colorado; although aside from the Master Plan staff and some specific technical resources, they were a clearinghouse providing, as they called it, "access to access."

To build the system and to make it function, the Colorado planning staff developed two forms which follow. The Resources Inventory Data Sheet was attached to the back of the State Planning Newsletter with instructions for filling it out. The Interim Guide to the Resource File was used to catalogue information and to cross-reference requests for help.

RESOURCE INVENTORY

Data Sheet

FILES: [ ] Subject [ ] People [ ] Organizations [ ] Information [ ] Phys. Resources

---

I. SUBJECT

010 [ ] AGRICULTURE
020 [ ] AIR POLLUTION
030 [ ] ALTERNATIVE SCHOOLS
040 [ ] BIBLIOGRAPHIES
050 [ ] CONSERVATION
060 [ ] CONSULTANTS
070 [ ] CURRICULUM DESIGN
080 [ ] DIRECTORIES
090 [ ] ENERGY
100 [ ] FILMS
110 [ ] FINANCING
120 [ ] FORESTRY
130 [ ] GAMES & SIMULATIONS
140 [ ] HEALTH
150 [ ] HOUSING
160 [ ] IMPACT STATEMENT
170 [ ] INFORMATION SYSTEMS
180 [ ] INTERNATIONAL ENVIRONMENT
190 [ ] JOB APPLICANTS
200 [ ] JOB OPPORTUNITIES
210 [ ] JOB SERVICES
220 [ ] KITS
230 [ ] LAND USE
240 [ ] LEGISLATION
250 [ ] MASTER PLANS
260 [ ] MEDIA
270 [ ] MEETING PLACES
280 [ ] MINORITIES
290 [ ] MINORITIES
300 [ ] NOISE CONTROL
310 [ ] OIL SHALE
320 [ ] OPEN SPACE TEACHING
330 [ ] OUT-OF-STATE CONTRACTS
340 [ ] OUTDOOR EDUCATION
350 [ ] PESTICIDES
360 [ ] PLANNING
370 [ ] POPULATION
380 [ ] PRESENTATIONS
390 [ ] PROJECTS
400 [ ] RADIATION
410 [ ] RECYCLING
420 [ ] REPORTS
430 [ ] RURAL CONTRACTS
440 [ ] SITES
450 [ ] SPEAKERS
460 [ ] STUDY GUIDES
470 [ ] SUPPLIES
480 [ ] TEACHER TRAINING
490 [ ] TEACHERS
500 [ ] TESTS, MEASUREMENTS
510 [ ] TRANSPORTATION
520 [ ] VOLUNTEERS
530 [ ] WATER POLLUTION
540 [ ] WATER USE
550 [ ] WEATHER MODIFICATION
560 [ ] WILDERNESS
570 [ ] YOUTH
[ ]

II. PEOPLE

Name_____
Address_____
City, State, Zip_____
Phone, bus., home_____
Role in EE_____

Name_____
Address_____
City, State, Zip_____
Phone, bus., home_____
Role in EE_____

Name_____
Address_____
City, State, Zip_____
Phone, bus., home_____
Role in EE_____

Name_____
Address_____
City, State, Zip_____
Phone, bus., home_____
Role in EE_____

III. ORGANIZATIONS

Name_____
Address_____
City, State, Zip_____
Phone_____
Description_____
_____

INTERIM GUIDE TO THE RESOURCE FILE

FORMAT

Subject headings are designated by a number and full caps:
160 IMPACT STATEMENTS.

Cross-reference listings which are not subject headings are designated in lower case, initial caps only:
Environmental Impact Statements See 160 IMPACT STATEMENTS.

When a subject heading has been changed, the subject file has been changed as follows:
1. Old entries have a note telling you where new entries are.
2. New subject headings have a note telling you where old entries are.

Note: The only subdivision within the five sections of cards is this: U. S. Government agencies and projects are grouped together under UNITED STATES. This is done because agencies may be variously known, e.g., U. S. Park Service or National Park Service or Park Service.

SUBJECT HEADINGS AND Cross Reference Titles

Affective Domain
  See 500 TESTS, MEASUREMENT
      480 TEACHER TRAINING
010 AGRICULTURE
020 AIR POLLUTION
030 ALTERNATIVE SCHOOLS
040 BIBLIOGRAPHIES
Clearinghouse
  See 170 INFORMATION SYSTEMS
Communications, Media
  See 260 MEDIA
050 CONSERVATION
060 CONSULTANTS
Contributions, in-kind, free
  See 060 CONSULTANTS
      270 MEETING PLACES
      470 SUPPLIES
      510 TRANSPORTATION
      520 VOLUNTEERS
070 CURRICULUM DESIGN
080 DIRECTORIES
Education, Environmental
  See 070 CURRICULUM DESIGN
      110 FINANCING
      250 MASTER PLANS
      440 SITES
      490 TEACHERS
Education, Innovative
  See 030 ALTERNATIVE SCHOOLS
      320 OPEN SPACE TEACHING
Education, Tools
  See 040 BIBLIOGRAPHIES
      080 DIRECTORIES
      100 FILMS
      130 GAMES & SIMULATIONS
      220 KITS
      380 PRESENTATIONS
      450 SPEAKERS
      460 STUDY GUIDES
090 ENERGY
100 FILMS
110 FINANCING
120 FORESTRY
130 GAMES AND SIMULATIONS
Government
  See 240 LEGISLATION
140 HEALTH
150 HOUSING
160 IMPACT STATEMENTS
170 INFORMATION SYSTEMS
180 INTERNATIONAL ENVIRONMENT
190 JOB APPLICANTS
200 JOB OPPORTUNITIES
210 JOB SERVICES
220 KITS
230 LAND USE
Law
  See 240 LEGISLATION
240 LEGISLATION
250 MASTER PLANS
Measurement
  See 500 TESTS, MEASUREMENT
260 MEDIA
270 MEETING PLACES
280 MINING
290 MINORITIES
Newspapers
  See 260 MEDIA
300 NOISE CONTROL
Nuclear Blasts
  See 400 RADIATION
310 OIL SHALE
320 OPEN SPACE TEACHING
330 OUT-OF-STATE CONTACTS
340 OUTDOOR EDUCATION
350 PESTICIDES
360 PLANNING
370 POPULATION
380 PRESENTATIONS
Press
  See 260 MEDIA
Programs
  See 390 PROJECTS
390 PROJECTS
400 RADIATION
Radio
  See 260 MEDIA
410 RECYCLING
Reclamation
  See 050 CONSERVATION
420 REPORTS
Restoration
  See 050 CONSERVATION
430 RURAL CONTACTS
Simulations
  See 130 GAMES & SIMULATIONS
440 SITES
450 SPEAKERS
460 STUDY GUIDES
470 SUPPLIES
480 TEACHER TRAINING
490 TEACHERS
Television
  See 460 MEDIA
500 TESTS, MEASUREMENT
Tools
  See 040 BIBLIOGRAPHIES
      080 DIRECTORIES
      100 FILMS
      130 GAMES & SIMULATIONS
      220 KITS
      380 PRESENTATIONS
      460 STUDY GUIDES
510 TRANSPORTATION
Underground blasts
  See 400 RADIATION
520 VOLUNTEERS
530 WATER POLLUTION
540 WATER USE
550 WEATHER MODIFICATION
560 WILDERNESS
570 YOUTH
580

ENGINEERING INSTITUTES
COLLEGE OF ENGINEERING
THE UNIVERSITY OF TEXAS AT AUSTIN

ADULT ENVIRONMENTAL EDUCATION NEEDS AND RESOURCES IN TEXAS

SURVEY OF GOVERNMENTAL AGENCIES AND OFFICIALS, ENVIRONMENTAL GROUPS, BUSINESS AND INDUSTRY

For the purpose of this survey, "environmental education" shall be defined as follows:

> "The process by which individuals are made more knowledgeable of the natural and man-made systems which support and affect the existence of life-forms. Essential to environmental education is the identification of problems and the exploration of alternative solutions."

Environmental education resources are personnel, methods, and tools used in promoting an individual's personal awareness of man's relationship to the world around him and his response to it.

1. To help us identify the content level and depth of environmental education material, please estimate the approximate number of your personnel in the categories indicated who now use/produce/need environmental education material. (Circle one answer for each item a. through d.)

	Number of Personnel Using/Producing/Needing Environmental Education Resources					
a. Managers or administrators	none	1-5	6-19	20-79	80-200	200 or more
b. Professional, technical, etc.	none	1-5	6-19	20-79	80-200	200 or more
c. Volunteer Members	none	1-5	6-19	20-79	80-200	200 or more
d. Others	none	1-5	6-19	20-79	80-200	200 or more

2. For each of the following environmental areas, please indicate by circling yes or no whether or not your organizational unit(s) produces, will produce, uses, or needs more PRINTED MATERIAL RESOURCES (books, journals, articles, lab manuals, technical reports, periodicals, posters, etc.) for Environmental Education.

PRINTED MATERIAL RESOURCES *(Please respond in each square)* AREAS	Produces		Will Produce This Year		Uses		Needs More	
AIR POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
ECONOMICS	Yes	No	Yes	No	Yes	No	Yes	No
ENERGY	Yes	No	Yes	No	Yes	No	Yes	No
GOVERNMENTAL LEGAL STRUCTURES	Yes	No	Yes	No	Yes	No	Yes	No
HEALTH HAZARDS (industrial hygiene, unsanitary food, radiation, disease, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
LAND-USE PLANNING (management of coastal development, zoning, natural disasters, flood plains, highway routing, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NATURAL RESOURCES (forestry, resource availability & allocation, water utilization, wildlife management, recreational facilities, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NOISE POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
POPULATION PROBLEMS	Yes	No	Yes	No	Yes	No	Yes	No
PROBLEMS OF URBANIZATION (overcrowding, crime, drug abuse, racial discord, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
RESOURCE RECYCLING	Yes	No	Yes	No	Yes	No	Yes	No
SOLID WASTE (INCL. LITTER)	Yes	No	Yes	No	Yes	No	Yes	No
TRANSPORTATION ALTERNATIVES	Yes	No	Yes	No	Yes	No	Yes	No
WATER POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
OTHER (SPECIFY)	Yes	No	Yes	No	Yes	No	Yes	No

3. For each of the following environmental areas, please indicate by circling yes or no whether or not your organizational unit(s) produces, will produce, uses, or needs more AUDIO-VISUAL RESOURCES (movies, video tapes, slides, film strips, pictures, photographs, records, tapes, etc.) for Environmental Education.

AUDIO-VISUAL RESOURCES *(Please respond in each square)* AREAS	Produces		Will Produce This Year		Uses		Needs More	
AIR POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
ECONOMICS	Yes	No	Yes	No	Yes	No	Yes	No
ENERGY	Yes	No	Yes	No	Yes	No	Yes	No
GOVERNMENTAL LEGAL STRUCTURES	Yes	No	Yes	No	Yes	No	Yes	No
HEALTH HAZARDS (industrial hygiene, unsanitary food, radiation, disease, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
LAND-USE PLANNING (management of coastal development, zoning, natural disasters, flood plains, highway routing, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NATURAL RESOURCES (forestry, resource availability & allocation, water utilization, wildlife management, recreational facilities, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NOISE POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
POPULATION PROBLEMS	Yes	No	Yes	No	Yes	No	Yes	No
PROBLEMS OF URBANIZATION (overcrowding, crime, drug abuse, racial discord, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
RESOURCE RECYCLING	Yes	No	Yes	No	Yes	No	Yes	No
SOLID WASTE (INCL. LITTER)	Yes	No	Yes	No	Yes	No	Yes	No
TRANSPORTATION ALTERNATIVES	Yes	No	Yes	No	Yes	No	Yes	No
WATER POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
OTHER (SPECIFY)	Yes	No	Yes	No	Yes	No	Yes	No

4. For each of the following environmental areas, please indicate by circling yes or no whether or not your organizational unit(s) produces, will produce, uses, or needs more HUMAN RESOURCES (consultants, speakers, etc.) for Environmental Education.

HUMAN RESOURCES *(Please respond in each square)* AREAS	Produces		Will Produce This Year		Uses		Needs More	
AIR POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
ECONOMICS	Yes	No	Yes	No	Yes	No	Yes	No
ENERGY	Yes	No	Yes	No	Yes	No	Yes	No
GOVERNMENTAL LEGAL STRUCTURES	Yes	No	Yes	No	Yes	No	Yes	No
HEALTH HAZARDS (industrial hygiene, unsanitary food, radiation, disease, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
LAND-USE PLANNING (management of coastal development, zoning, natural disasters, flood plains, highway routing, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NATURAL RESOURCES (forestry, resource availability & allocation, water utilization, wildlife management, recreational facilities, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NOISE POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
POPULATION PROBLEMS	Yes	No	Yes	No	Yes	No	Yes	No
PROBLEMS OF URBANIZATION (overcrowding, crime, drug abuse, racial discord, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
RESOURCE RECYCLING	Yes	No	Yes	No	Yes	No	Yes	No
SOLID WASTE (INCL. LITTER)	Yes	No	Yes	No	Yes	No	Yes	No
TRANSPORTATION ALTERNATIVES	Yes	No	Yes	No	Yes	No	Yes	No
WATER POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
OTHER (SPECIFY)	Yes	No	Yes	No	Yes	No	Yes	No

5. For each of the following environmental areas, please indicate by circling yes or no whether or not your organizational unit(s) produces, will produce, uses, or needs more ON-THE-JOB LEARNING RESOURCES (on-the-job training, field trips, simulation instruction, etc.) for Environmental Education.

ON-THE-JOB LEARNING *(Please respond in each square)* AREAS	Produces		Will Produce This Year		Uses		Needs More	
AIR POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
ECONOMICS	Yes	No	Yes	No	Yes	No	Yes	No
ENERGY	Yes	No	Yes	No	Yes	No	Yes	No
GOVERNMENTAL LEGAL STRUCTURES	Yes	No	Yes	No	Yes	No	Yes	No
HEALTH HAZARDS (industrial hygiene, unsanitary food, radiation, disease, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
LAND-USE PLANNING (management of coastal development, zoning, natural disasters, flood plains, highway routing, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NATURAL RESOURCES (forestry, resource availability & allocation, water utilization, wildlife management, recreational facilities, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
NOISE POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
POPULATION PROBLEMS	Yes	No	Yes	No	Yes	No	Yes	No
PROBLEMS OF URBANIZATION (overcrowding, crime, drug abuse, racial discord, etc.)	Yes	No	Yes	No	Yes	No	Yes	No
RESOURCE RECYCLING	Yes	No	Yes	No	Yes	No	Yes	No
SOLID WASTE (INCL. LITTER)	Yes	No	Yes	No	Yes	No	Yes	No
TRANSPORTATION ALTERNATIVES	Yes	No	Yes	No	Yes	No	Yes	No
WATER POLLUTION	Yes	No	Yes	No	Yes	No	Yes	No
OTHER (SPECIFY)	Yes	No	Yes	No	Yes	No	Yes	No

6. Does your organizational unit(s) now use environmental education material produced by the following organizations? (Please circle Yes or No for a through j)

a. In-house resources . . . . . Yes No

b. Publishers . . . . . Yes No

c. Federal Government . . . . . Yes No

d. State and Local Government . . . . . Yes No

e. Industrial or Trade Associations . . . . . Yes No

f. Industrial or Business Firms . . . . . Yes No

g. Environmental Groups or Organizations . . . . . Yes No

h. Schools, Colleges, or Universities . . . . . Yes No

i. Non-profit Foundations . . . . . Yes No

j. Other _____ . . . . .

7. Should the State of Texas establish a statewide Environmental Education Clearinghouse to help locate and retrieve environmental education resources?

Yes No

8. Name of Organization _____

Address _____

City _____ State _____ Zip _____

Name of official completing questionnaire _____

Date _____ Title _____

Thank you for your cooperation. Please put this questionnaire in the post-paid envelope and return it to us by April 6, 1973.

Engineering Institutes
c/o Division of Extension
Box K
College of Engineering
University of Texas
Austin, Texas 78712

FOR OFFICIAL USE

_____

TEXAS EDUCATIONAL AGENCY

Research Office, MIC

Environmental Education Resources and Needs Survey for Texas Public Schools

The goal of this survey is to determine the scope of environmental education resources and needs in Texas public schools. Such information will be instrumental in the design and integration of environmental education into public school curricula.

For the purpose of this survey, "environmental education" shall be defined as follows:

> The process by which students are made more knowledgeable of the natural and man-made systems which support and affect the existence of life-forms. Essential to environmental education is the identification of problems and the exploration of alternative solutions.

Environmental education resources are personnel, methods, and tools used in promoting a student's personal awareness of man's relationship to the world around him and his resource to it.

Numbers in parentheses are for the purpose of data analysis and should be ignored by the respondent.

1. In the matrix shown below, check ( ) the categories which you feel most accurately evaluate the levels of environmental awareness and concern of your faculty and students. There is a difference between being aware of an issue and being concerned about that issue. A person can be aware and yet not be concerned or vice versa.

	AWARE 1	UNAWARE 2	CONCERNED 3	UNCONCERNED 4
FACULTY (25-26)				
STUDENTS (27-28)				

By March 16, 1973, please return this questionnaire to:

Mr. Jerry T. Barton, Director of Research
Research Office, MIC
201 East 11th Street
Austin, Texas 78701 RES-017

2. On the matrix below, indicate with a check ( ) in the column entitled "ADDITIONAL RESOURCES NEEDED" the types of additional environmental education resources which your school needs. In the columns entitled "QUALITY OF RESOURCES CURRENTLY AVAILABLE," rate with a check ( ) each of the various resources available to your school on their levels of effectiveness. The rating scale ranges from a value of "1", which denotes "excellent," to a value of "4", which means "worthless." Do not "rate" those resources which are not currently available.

FOR TEA USE ONLY	TYPES OF RESOURCES	ADDITIONAL RESOURCES NEEDED (1)	QUALITY OF RESOURCES CURRENTLY AVAILABLE (2)			
			1	2	3	4
(29-30)	FILMS					
(31-32)	SLIDES					
(33-34)	BOOKS					
(35-36)	POSTERS					
(37-38)	TAPES					
(39-40)	RECORDS					
(41-42)	TELEVISION					
(43-44)	PERIODICALS					
(45-46)	FIELD TRIP FACILITIES					
(47-48)	SPEAKERS					
(49-50)	WORKBOOKS					
(51-52)	OUTDOOR CLASSROOMS					
(53-54)	LAB MANUALS					
(55-56)	TECHNICAL PAPERS AND REPORTS					
(57-58)	HANDOUT MATERIALS					
(59-60)	FACILITIES/SERVICES OF COLLEGES AND UNIVERSITIES					
(61-62)	CONSULTANTS					
(63-64)	ENVIRONMENTAL GAMES, SIMULATIONS					
(65-66)	OTHER (specify)					

3. On the matrix below, indicate with a check ( ) in the column entitled "ADDITIONAL RESOURCES NEEDED" the CONTENT AREAS for which your school needs additional environmental education resources. In the columns under "QUALITY OF RESOURCES AVAILABLE," rate with a check ( ) the quality of the various resources available to your school in each of the CONTENT AREAS with the value of "1" denoting "excellent" and the value of "4" denoting "worthless." Do not rate those resources that are not currently available to your school.

FOR TEA USE ONLY	CONTENT AREAS	ADDITIONAL RESOURCES NEEDED (1)	QUALITY OF RESOURCES CURRENTLY AVAILABLE (2) 1	2	3	4
(10-11)	POPULATION PROBLEMS					
(12-13)	POLLUTION (air, water, noise, waste--solid and liquid, soil)					
(14-15)	HEALTH HAZARDS (toxic chemicals, radiation, disease)					
(16-17)	URBAN-RURAL PLANNING (land management, agriculture, construction, zoning)					
(18-19)	TRANSPORTATION ALTERNATIVES					
(20-21)	WILDLIFE					
(22-23)	HISTORICAL PRESERVATION					
(24-25)	ECONOMICS					
(26-27)	RESOURCE DISTRIBUTION AND ALLOCATION (minerals, manpower, food, oceans, forests)					
(28-29)	HEREDITARY ADAPTATIONS					
(30-31)	RECREATION					
(32-33)	AESTHETIC CONSIDERATIONS (arts, outdoor scenery)					
(34-35)	RESOURCE RECYCLING					
(36-37)	WATER UTILIZATION AND STREAM FLOW ALTERATION					
(38-39)	NATURAL DISASTERS					
(40-41)	CLIMATE CHANGES AND MODIFICATIONS					
(42-43)	ENERGY ALTERNATIVES					
(44-45)	GOVERNMENTAL/LEGAL STRUCTURES, SOCIAL CONCERNS					

4. Check ( ) the appropriate categories to indicate the extent of local effort to include environmental education in the public school curriculum.

____(46) Existing courses, such as English, government, economics, biology, and chemistry, have been modified to include environmental education materials, or will be modified and implemented within a year.

____(47) Environmental education courses are currently in operation, or have been planned and will be implemented within a year.

____(48) Environmental education curricula additions are presently under consideration.

____(49) Teacher environmental education workshops are functioning.

____(50) Teacher environmental education workshops are planned.

____(51) Other(s) Specify:_____

5. The environmental education resources presently used by your school come from the following [indicate with a check( )]:

____(52) Environmental clubs and organizations

____(53) Industrial materials and publications

____(54) Government materials and publications

____(55) Scientific and professional journals

____(56) Educational supply houses and developmental laboratories

____(57) Nonprofit foundations, groups, and organizations

____(58) Colleges and universities

____(59) Other schools

____(60) Regional education service centers

____(61) Texas Education Agency

6. Do you feel a statewide environmental education clearinghouse is needed to help educators locate and retrieve environmental education resources?

____Yes
(62)
____No

7. In the matrix below indicate with a check ( ) the level of priority which you feel should be assigned to each of the environmental issues listed under the column entitled ISSUES. Assign a priority of "1" to the most crucial issues and a priority of "4" to the least important.

FOR TEA USE ONLY	ISSUES	PRIORITY 1	2	3	4
(10)	AIR POLLUTION				
(11)	WATER POLLUTION				
(12)	NOISE POLLUTION				
(13)	SOLID WASTE POLLUTION				
(14)	RESOURCE RECYCLING				
(15)	POPULATION PROBLEMS				
(16)	RESOURCE AVAILABILITY & ALLOCATION				
(17)	HEALTH HAZARDS				
(18)	URBAN-RURAL PLANNING				
(19)	ENERGY SOURCES				
(20)	TRANSPORTATION ALTERNATIVES				
(21)	WILDLIFE MANAGEMENT				
(22)	HISTORICAL PRESERVATION				
(23)	FORESTRY				
(24)	AESTHETIC CONSIDERATIONS				
(25)	WATER UTILIZATION & STEAM FLOW				
(26)	NATURAL DISASTERS				
(27)	SOCIOLOGICAL CONCERNS				
(28)	CLIMATE CHANGE & MODIFICATION				
(29)	ECONOMICS				
(30)	HEREDITARY ADAPTATIONS				
(31)	RECREATION				
(32)	GOVERNMENTAL/LEGAL STRUCTURES				
(33)	OTHER (SPECIFY)				

The following two questions should be answered by principals only.

8. In the space below indicate the number of environmental education courses and the number of school-sponsored environmentally-oriented clubs and organizations presently functioning at your school.

Courses_____(34-35)

Clubs/Organizations_____(36-37)

9. Indicate below the number of teachers you have on your school's faculty with special environmental education backgrounds or training.

Teachers_____(38-39)

ENVIRONMENTAL SPEAKERS RESOURCE LIST

for the

TEXAS ADVISORY COUNCIL ON ENVIRONMENTAL EDUCATION

Name_____ _____Phone (AC)_____

Address_____

Areas of Environmental Interest and Expertise_____

_____

_____

_____

Background in Environmentally-Oriented Work_____

_____

_____

_____

Affiliations_____

_____

Profession_____

Travel Requirements or Restrictions (distance, expenses, etc.)_____

_____

_____

Type of Presentation and Equipment Needed for Such_____

_____

Audience (Check Preference):

Schools_____
Civic Clubs and Organizations_____
Religious Groups_____
Industrial Groups_____
Labor Groups_____
Environmental Groups_____
Do you have any requirements or preferences concerning audience size?_____

I, _____, hereby give the Texas Advisory Council on Environmental Education permission to include my name in their Statewide environmental speakers list, and sanction its distribution to State agencies, schools, private clubs and organizations, religious groups, and other groups interested in environmental education. In so doing, I understand that I am not obligated to accept speaking engagements which I deem undesirable or inconvenient.

APPENDIX C

ORGANIZATION OF DATA

Whether one collects information about environmental problems and conditions from "experts," from written reports and governmental files or from the general public, some scheme will be required for organizing and presenting the information. Further, if one uses the method of rank ordering problems in order to determine environmental concerns, an organizational scheme is imperative.

Three examples are included here. The first presents the results of the Colorado planners' work in organizing and listing the range of environmental problems relative to that state. The second is based on a conceptual framework for determining environmental impact, prepared by Paul Cromwell and Tish Davis of the Office of Environmental Affairs, U. S. Department of Health, Education and Welfare. The third is a check list of environmental issues used by the state planners in Texas.

It is hoped that, no matter what approach is used to collect the information, these schemes and the lists of problems incorporated in them will be helpful as a point of departure for the task or framework for organizing the results.

COLORADO ENVIRONMENTAL PROBLEMS[1]

Environmental Problems Referred to by Both Rural & Urban Residents

Land-use planning, water utilization, and economic stagnation were viewed by most rural Master Planning participants as their most serious environmental problems. Air pollution and population pressures on the Front Range were, in the minds of most urban planning participants, the two principal threats to environmental quality. In spite of their different perspectives, many environmental problems were referred to by both groups. Following is a list of common problem areas:

- Water Problems
  - Inadequate sewage treatment
  - Garbage and litter in waterways
  - Little water-use planning
- Land Problems
  - Inadequate zoning and land-use planning
  - Solid waste disposal
  - Litter and visual blight
  - General depletion of natural resources

[1] Colorado Interim Master Plan, pp. 11-14.

- Oil shale development

- Air Problems
  - Industrial and power plant emissions
  - Odors (feedlots, rendering plants, smog, etc.)
  - Automotive and truck emissions
- Environmental and Economic Impact of the Olympic Games
- Health Hazards of Air and Water Pollution, Radiation, Pesticides, Noise, etc.
- Materialistic Life-Styles

Environmental Problems Referred to Primarily by Rural Residents

The following environmental problems were cited almost exclusively by rural planning participants.

- Water Problems
  - Transmountain, transbasin diversion and downstream commitment
  - Salinization as a result of irrigation
  - Feedlot and fertilizer run-off
  - Acid from mine drainage
  - Sedimentation
  - Surface and ground water contamination
  - Over-appropriation of water sources
- Land Problems
  - Restrictions on economic utilization
  - Mining operations
  - Erosion, blowing of topsoil
- Economic Problems
  - Lack of rural job opportunities
  - Discriminatory freight rates
  - Lack of adequate housing
  - Increasing costs of farming and ranching
  - Inadequate return on farming and ranching investment
  - Low taxation bases and property taxes as the major source of economic revenue
  - Predator control
  - Agricultural marketing
- Human Problems
  - Loss of young people to urban areas
  - Lack of rural-urban cooperation and dialogue
  - Loss of rural political strength
  - Lack of leadership in the various environmental problem areas

Environmental Problems Referred to Primarily by Urban Residents

The following environmental problems were cited almost exclusively by urban planning participants.

- Water Problems
  - Industrial and factor effluent
  - Sale of water by Denver to suburban areas
- Land Problems
  - Need for parks and open spaces
- Air Problems
  - Vehicular emissions
- Transportation
  - Vehicle congestion
  - Proposed parking garages
  - Lack of adequate mass transit system
  - Highway construction
- Over-Population of the Front Range
- Low Income and Minority Housing, Jobs and Health, and the Loss of Cultural Identity
- Work Environment of Laborers and Factory Employees

Environmental Problems Not Widely Discussed

The following environmental problems were cited only occasionally in meetings with rural and urban planning participants.

- Environment as a World-Wide Crisis
  - Global implication of over-population
  - The U. S., with 6% of the world's population, consumes 1/3 to 1/2 the annual world output of non-renewable natural resources
  - Ocean dumping
- Economic Impact of Urban Environmental Problems and the Higher Cost of Control
- Lack of Sufficient Concern and Efforts to Find Substitutes for Non-Renewable Energy Resources
- Food Preservatives and Chemicals
- Multiple-Use Concept (Public Land vs. Private Land)
- Administrative Disposition and Use of Public Land
- Loss of Land to Urbanization and Other Non-Agricultural Uses
- Uncontrolled Dispersal of Population in Rural Areas
- Esthetically and Functionally Poor Architectural Design
- Inadequate and Shoddy Building Construction
- Imminent Fire Hazards and Sewage Disposal Problems Resulting from Lack of Planning and Zoning in Subdivisions and in Mountain Areas of the Front Range
- Flood Control

- Endangered Animal Species
- Loss of Wildlife Habitat
- Loss of Fishery Resources, Water-Oriented Recreation (Swimming, Boating)

INITIAL CRITERIA FOR DETERMINING ENVIRONMENTAL IMPACT[2]

Natural Resource Use
1. Land use
   - Surface land
   - Underground space
2. Mineral and fuel use
3. Water use
4. Air use (space)

Pollution
1. Air pollution
   - Stable sources
   - Mobile sources
2. Water pollution
   - Surface water
   - Ground water
3. Soil pollution
4. Land pollution
   - Land structure
   - Land contour
   - Land cover
5. Pollution of wetland, desert, tundra and alpine environments
6. Energy (as a pollutant)
   - Heat
   - Sound
   - Electromagnetic waves
   - Shock waves and wind patterns
7. Waste and storage
   - Waste production
   - Waste disposal
   - Storage of contaminants

Populations
1. Human populations
   - Density
   - Distribution
   - Age characteristics
   - Movement
   - Genetic characteristics

---

[2]Office of Environmental Affairs, Dept. of Health, Education & Welfare, HEW NEPA Compliance Procedures, Administrative Manual, 1974, Chapter 30-15.

2. Animal populations
   - Diversity of species
   - Density
   - Movement
   - Genetic character
3. Plant populations
   - Diversity of species
   - Density
   - Genetic character

Services

1. The distribution or alteration of basic services -- supplying food, water, power and shelter, trash disposal, sewage removal and health care.
2. Human services -- supplying care for the aged, handicapped, mentally retarded and the young
3. Intermediary systems
   - Transportation
   - Communications -- telephone, telegraph, radio (one & two-way), mail
   - Economic exchange (not limited to $)
4. Long-range services
   - Education
   - Health

Human Values

1. Historic preservation
2. Endangered species
3. Visual environment, odor and noise

A Check List for Determining Priorities of Environmental Issues

Texas Education Agency

FOR TEA USE ONLY	ISSUES	PRIORITY 1	2	3	4
(10)	AIR POLLUTION				
(11)	WATER POLLUTION				
(12)	NOISE POLLUTION				
(13)	SOLID WASTE POLLUTION				
(14)	RESOURCE RECYCLING				
(15)	POPULATION PROBLEMS				
(16)	RESOURCE AVAILABILITY & ALLOCATION				
(17)	HEALTH HAZARDS				
(18)	URBAN-RURAL PLANNING				
(19)	ENERGY SOURCES				
(20)	TRANSPORTATION ALTERNATIVES				
(21)	WILDLIFE MANAGEMENT				
(22)	HISTORICAL PRESERVATION				
(23)	FORESTRY				
(24)	AESTHETIC CONSIDERATIONS				
(25)	WATER UTILIZATION & STREAM FLOW				
(26)	NATURAL DISASTERS				
(27)	SOCIOLOGICAL CONCERNS				
(28)	CLIMATE CHANGE & MODIFICATION				
(29)	ECONOMICS				
(30)	HEREDITARY ADAPTATIONS				
(31)	RECREATION				
(32)	GOVERNMENTAL/LEGAL STRUCTURES				
(33)	OTHER (SPECIFY)				

Appendix D

DETERMINING THE GOALS

PLANNING GOALS

One of the major tasks undertaken at the Estes Park Conference was the generation of goals for a master plan effort. The participants were asked to develop a list of possible goals in two areas: the planning process itself and the document or product (content) of the process.

What follows is in no way a definitive list, nor is it applicable in its entirety in each case. However, as with other lists throughout this document, it should serve as a good point of departure for anyone interested in drawing up goals for his own effort.

1. A great deal of emphasis was placed on the process or procedure used for putting the plan together; in fact many indicated this may be more important than the production of the document or other products. The process itself was seen to have the following goals:

- To gain a broad sense of citizen support -- an interdisciplinary power base -- through direct involvement of a cross section of citizens in the planning effort.
- To generate an interest among the public for environmental education through publicity, personal contact, and involvement.
- To conduct a massive, statewide environmental awareness education program.
- To clarify, define, and then describe to the public the importance of environmental education.
- To attempt to reduce the unnecessary duplication of efforts and to promote cooperation and improved communication among those in the state working on environmental education.
- To work toward reducing conflicts over environmental education leadership, responsibility, and jurisdictions.
- To place and then articulate decisions about the future directions for environmental education at the state and local level, thereby facilitating the federal government's ability to be more responsive to local needs and concerns.

2. In terms of the document or other products (content) produced as a result of the effort, the following are goals which seemed to have value:

- To inventory the environmental and related education problems, needs, conditions and concerns of the state.
- To inventory the presently available resources and services in the state and determine the level of interest in sharing on the part of those likely to have resources at their disposal in the future.
- To inventory and, to some extent, evaluate current environmental education efforts.
- To determine who has either direct or indirect power over environmental education matters at the state and local level and then work to recruit their participation and support.
- To determine the factors in society influencing or controlling change to which action must be directed which must have support from environmental education.

PROGRAM GOALS

In keeping with the three levels of problems presented in Chapter 5, three specific kinds of program goals must be developed.

Level One - The environment and ecological balance. These goals tend in many cases to be so state-specific that they are not listed here. To help in drawing up a list of level one goals, the reader should refer to Appendix C for a listing of environmental problems. Deciding whether or not any of these problems are in fact problems in any given state is, of course, one of the major purposes of a planning effort for a problem-centered environmental education program.

The goals which might apply to the other two levels of problems are more easily presented here. These lists of goals were drawn from the various state documents reviewed. They are in no way exhaustive, but are representative only.

Level Two - Citizen awareness, knowledge and understanding, etc.

- To create public awareness, interest, and motivation for action from the general citizenry.
- To create an environmental literacy which should promote a personal environmental ethic among citizens.
- To create attitudes and values which allow for an environmentally conscious citizenry.
- To develop skills, knowledge, and understanding in matters involving the environment and its ecological balance.
- To promote knowledge and understanding of ecological principles and a change in attitudes and values about the environment through personal commitments to life

styles which are conducive to maintaining a quality environment.

- To help people hold attitudes, values, and beliefs; skills and abilities; and pertinent knowledge, information and understanding which will result in their promoting, supporting and/or carrying out proper maintenance and/or improvement of the quality of the environment for themselves and for others.
- To help people exhibit personal, organizational, and institutional behavior which results in the maintenance and/or improvement of the quality of the environment.

Level Three - The resources and programs necessary to educate the citizenry.

- To create "total community involvement" in developing and promoting environmental education.
- To promote more effective public and private institutional responses to environmental problems.
- To conduct research and development which will provide a balanced set of judgments and projections of future environmental conditions based on various sets of interrelated environmental problems.
- To identify and/or produce evaluation instruments and implement evaluation strategies to determine program effectiveness.
- To utilize evaluation results to determine program effectiveness in terms of a balanced set of costs and benefits and to make any appropriate modifications and adjustments in the program.
- To develop and conduct training programs for government and non-government personnel or work with others who do.
- To collect, store, retrieve, and disseminate information about the environment (problems, conditions, judgments, and projections).
- To collect, store, retrieve, and make available baseline data about the condition of the environment in a specific area.
- To collect, store, retrieve, and make available information about the condition of the environment at specific intervals subsequent to the baseline data.
- To develop or assist in developing environmental education programs utilizing mass media.
- To develop or assist in developing curriculum and audio-visual and other enrichment material.

- To develop and conduct programs involving the community at large, or segments of the community, in working toward the educational goals utilizing approaches that are consistent with the state's definition of environmental education.
- To develop academic and intern programs.
- To make available facilities and expertise which will enable individuals and groups to conduct research and development to find solutions to environmental problems consistent with the view of the future desirable environmental conditions.

Appendix E

FORCE FIELD ANALYSIS

Force Field Analysis involves evaluating the dynamic opposing forces in any given situation. This method of analysis provides a clear display of those forces for or against any particular decision that has to be made.

It becomes difficult to think of resistance to change as simply stubbornness when we examine the many forces within and without an individual, organization or project which are operating both for and against change. We must also recognize that these forces themselves are constantly changing. It helps us avoid simple answers to complex problems -- answers which are worse than useless, because they delude us into thinking we understand the problems and thus stop us from continuing the search for the data we need to understand them.

In setting objectives and moving toward them, the Force Field Analysis provides one with more technology for understanding resources and constraints, the negatives and positives leading to the implementation of the plan toward a goal or objective.

In conducting such an analysis it is helpful to assemble a small or medium sized group of interested and knowledgeable people who, given the particular task or effort to be undertaken, brainstorm a list of the forces which are present in the individuals, the organization, or the environment which are for or helping in the accomplishment of the task or effort. The same process is repeated focusing on the forces which are against or opposing the accomplishment of the task or effort.

The diagram below shows how one might set up the chalk board or flip chart paper to record the ideas and other comments made during the brainstorm.

Task Title or Name

Forces For	Forces Against

The focus of a Force Field Analysis is not simply on objective criteria, such as time or money, which might be applied to a decision to determine its effectiveness or appropriateness. It must also focus on the individuals involved, what it is that affects them or influences them in moving in one direction or another, including both internal forces and external or environmental forces.

This method has great usefulness and broad applicability for the manager. It can aid him in making decisions, help him understand the complexity of forces at work in his organization, and is of inestimable value in providing him with deeper understanding of the complexity of human behavior in and outside the organization.

For those not familiar with the brainstorming aspects of the process described above, the following brief outline may be helpful. The basic idea is to generate, according to the following rules, as many ideas and concepts from the members of the group as possible. Someone must record the ideas contributed on a piece of paper or chalk board so that all the participants can see them and in order to maintain a written account of the work.

BRAINSTORMING

RULES FOR SUCCESS

B = BUILD ON OTHERS' IDEAS	Let the ideas of others stimulate your own thinking.
R = RESERVE JUDGEMENT	Don't take the time to examine or evaluate any of the ideas as they flow. Anything and everything goes!
A = AIM FOR QUANTITY	The more the better! Don't worry about duplication, overlap or some similar idea.
I = IMAGINE WILDLY	No idea is too absurd; let your mind wonder and wander freely. Don't hold ideas back that are out of the ordinary. Rewards are for the far-out ideas. Creativity begins at the outer limits of the expected.
N = NO KILLER PHRASES	Avoid saying things like: That won't work. How absurd. They won't buy that. What a stupid idea. We've already tried that. It's against policy. We've never done that. That's ridiculous!

There are a couple of final steps that one might take to complete the Force Field Analysis and to move toward doing something with the data generated.

First, using the list of brainstorming forces complete the four steps listed below:

1. Rank order them by severity or importance.
2. Cross out the UNIMPORTANT FORCES, and those that are neutralized by equally strong opposing forces.

3. List the NEGATIVE FORCES. These are the ones which must be dealt with and overcome.

4. List the IMPOSSIBLE FORCES. These will have to be lived with. It will be necessary to learn to cope with and negate the results of these which cannct be removed or neutralized.

Now, using the list of Negative Forces isolated from the list in step 3 above, begin to design strategies for mitigating, removing or counterbalancing these factors.

One way to carry this out would be to view the Negative Forces as problems and submit them to a creative problem-solving process such as that depicted by the eight steps listed below.

CREATIVE PROBLEM SOLVING

1. Problem identification or recognition.
2. Definition and redefinition of the problem.
3. Exploration of possible approaches, perceptions or interpretations.
4. Collection of data about the problem in preparation for solution.
5. Development of criteria for evaluation of solutions.
6. Generation of possible alternative solutions.
7. Analysis and evaluation of alternatives.
8. Testing, verification, feedback.

Appendix F

TECHNICAL ASSISTANCE

Technical assistance is a complex function. To work well it must combine technical expertise and subject knowledge with assistance skills. Too often people with technical skills and/or subject competence are not helpful; in some cases such "assistance" has been damaging. The purpose of any technical assistance effort should be to provide technical expertise and subject knowledge in such a way as to facilitate the continued growth and development of the person helped to the extent that he becomes self sufficient.

The basics of this approach are contained in a paper prepared by the Center for Research and Education for use with its technical assistance efforts.

> Rocchio, Richard E., "Environmental Education Technical Assistance," Center for Research and Education, Denver, Colorado, 1972. (mimeo)

The two resources used are Carkhuff and the community development techniques called "Movimento de Criatividade Communitaria" developed by Vladamier de Gregorio of Brazil.

The several references below may be useful in gaining a fuller understanding of the community development approach. The two volumes by Carkhuff are, we believe, the best available on the personal aspects.

Arensberg, Conrad M. and Arthur H., Niehoff, *Introducing Social Change*. Chicago, Illinois: Aldine Publishing Company, 1964.

Avezuela, Manuel, *Formacion de Dirigentes y Organacio de Grupos Comunitarios*. Barcelona, Spain: Sagitario, S. A., 1968.

Batten, T. R., *Communities and Their Development*. London: Oxford University Press, 1957.

Batten, T. R. and Madge Batten, *The Non-Directive Approach in Group and Community Work*. London: Oxford University Press, 1967.

Beals, R. L., "Resistance and Adaptation to Technological Change: Some Anthropological Vie[illegible]" *Human Factors*, December, 1968.

Carkhuff, Robert R., *Helping and Human Relations, Vol. I - Selection and Training*. New York: Holt, Rinehart & Winston, Inc., 1969.

Carkhuff, [illegible]bert R., *Helping and Human Relations, Vol. II - Practice and Research*. New York: Holt, Rinehart & Winston, Inc., 1969.

Carlson, Richard O., *Adoption of Educational Innovations*, Center for Advanced Study of Educational Administration, University of Oregon, August 1965.

situation where the outcomes and the time are clearly fixed; education has open-ended outcomes and more or less unlimited time.

Flanagan, John C., "The Critical Incident Technique," *Psychological Bulletin*, LI, No. 4, July 1954.

Flanagan, John C., "Individualizing Education," *Education*, XC, No. 3, February-March 1971.

Glaser, R., "Psychological Bases for Instructional Design," *AV Communication Review*, Winter 1966.

Glaser, R. and A. J. Nitko, *Measurement in Learning and Instruction.* Learning Research and Development Center, University of Pittsburgh, March 1970.

Kelly, Earl C., *The Workshop Way of Learning.* New York: Harper and Bros. Publishers, 1951.

Schein, Edgar H. and Warren C. Bennis, *Personal and Organizational Change through Group Methods.* New York: John Wiley and Sons, Inc., 1965.

Smith, R. G., "The Development of Training Objectives," The George Washington University Human Resources Office Bulletin 11, June 1964.

Smith, R. G., "The Design of Instruction Systems." The George Washington University Human Resources Research Offices, TR 66-18, November 1966.

Stone, James C., *Breakthrough in Teacher Education.* San Francisco: Jossey-Bass, 1968.

Wight, A. R. and Glendon Casto, *Training and Assessment Manual for a Peace Corps Instrumented Experiential Laboratory.* Denver, Colorado: Center for Research and Education, 1969. (PC Contract 25-1708)

REFERENCES: USE OF MASS MEDIA

The best treatment we have seen of the problems and the potential of mass media is:

Sandman, Peter M., "Mass Environmental Education: Can Media Do the Job?" University of Michigan, School of Natural Resources, 1973. (mimeo)

This paper presents specific recommendations for using mass media for environmental education and provides some very useful insights into how to deal with mass media personnel. It also contrasts the advertising model of public persuasion with more conventional educational approaches.

Other resources for the use of mass media include:

NTL Institute for Applied Behavioral Science, *Reading Book for the Annual Laboratories in Community Leadership Training*. Washington, D. C.: NTL, 1968.

Spicer, E. H. (ed.), *Human Problems in Technological Change: A Casebook*. New York: Russell Sage Foundation, 1952.

Watson, Goodwin (ed.), *Concepts for Social Change*. Washington, D. C.: National Training Laboratories, National Education Association, 1967.

REFERENCES: TRAINING

Training, as it is useful to those associated with environmental education planning, covers the full range of training situations and learners from in-service teacher training to the training of Technical Assistance personnel in "helping" skills. The planner may also wish to delve more deeply into the basic training elements from needs assessment, through selection and use of appropriate methods, media, and material, to evaluation and feedback.

In our opinion, the single best, handy and practical reference for both the experienced and inexperienced trainer is:

> Craig, Robert L. and Lester R. Bittel, (ed.), *Training and Development Handbook*, sponsored by the American Society for Training and Development. New York: McGraw-Hill Book Co., 1967.

This book is, in effect, a state-of-the-art report on the subject of scientific training and development. Its practical value is enhanced by the fact that each chapter is written by a practitioner in the field. It covers training methods, organization, planning, budgeting, records, and even the legal aspects. Many of the key chapters contain useful bibliographies. The book does not, however, cover the full variety of situations which might be faced by the environmental education planner; thus it may require some imagination in the application of specific techniques.

In addition to this Handbook, Robert Mager has written four books tremendously useful for training as well as for a number of other applications. Published by Fearon Publishers/Lear Siegler, Inc., Belmont, California, they are:

> *Preparing Instructional Objectives*, 1962
> *Developing Attitudes Toward Learning*, 1963
> *Analyzing Performance Problems*, 1970
> *Goal Analysis*, 1972

The following resources might also be useful, especially for some of the audiences and situations not covered by Craig and Bittel. With respect to these references, a simple distinguishing difference between training and education is: Training is a teaching-learning

Clevenger, Theodore, Jr., *Audience Analysis*. New York: The Bobbs-Merrill Company, Inc., 1966.

Feringer, F. R., *The Future of Puget Sound: A Design for Environmental Quality through Community Involvement*, Western Washington State College, Bellingham, Washington, 1970.

Harvard Business Review, *Consumer Motivation Series*. Cambridge, Massachusetts: Harvard Business Review, 1965.

Johnson, Nicholas, *How to Talk Back to Your Television Set*. New York: Bantam Books, 1970.

McLuhan, Marshall, *Understanding Media: The Extensions of Man*. New York: Signet Books, 1964.

Minnick, Wayne C., *The Art of Persuasion*. 2d ed. Boston: Houghton Mifflin Company, 1968.

Station WQED, *Drugs in Western Pennsylvania, A Proposal for Community Mobilization by Public Television Station WQED*, Pittsburgh, Pa., September 28, 1970.

University of Indiana Foundation for Educational Television, *ETS (Educational Television Service) Program Service: Programming Reports*. (Gives formats for innovative minority and other programming being broadcast.)